LANGUAGE LEARNING SPACES

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Language Learning Spaces

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DEDICATION

I would like to dedicate this thesis to my parents and sisters who always provided me the support and encouragement to do better, throughout the development of this project.
Language learning is a gradual process. Tutors and faculty have been using various methods in order to share their knowledge around the world. They give lectures in schools and universities, record their class sessions, and post them on video streaming web sites. Although there are many sites available, only a few meet the National Standards for teaching a foreign language. This thesis project contributes towards the learning of a foreign language through social networking.

This thesis is creating environments to learn languages that can be Standards based. The application consists of powerful tools such as blogging, chatting, wiki, archiving, and search engines. It provides tutors with full administrative control to manage their users and class content. They are also allowed to fully customize their site according to the class level. Hence, the overall objective of this thesis project is to make language learning more interactive and user-friendly.

This project is a collaborative work done by two masters’ students. The whole application is divided into two equal parts. This thesis mainly focuses on the development of social networking tools, such as text blogging and video blogging, designing of the web interface by using CSS and master pages, and development of web application settings, such as the administrative control panel and teacher class settings.
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CHAPTER 1

INTRODUCTION

1.1 BACKGROUND

Language learning is not about memorizing some words or reading some grammar rules. It’s about knowing the meaning and actual implementation of the words in the daily life [1]. Learning a foreign language is much like learning how to drive or swim. In order to achieve this you should not only understand the concepts and the techniques, but also start practicing these methods to sharpen your skill [1].

Today learning is not limited to a class. Tutors and faculty are trying to expand their knowledge around the world. They have now started exploring the web in order to share their study material with the masses. There are many web-based sites available but only a very few have content embedded that reflect the ACTFL (the American Council on the Teaching of Foreign Languages) Standards of teaching foreign languages and which target learner proficiency levels described according to ACTFL’s proficiency guidelines. This thesis project contributed towards the learning of foreign language through social networking by following the language learning Standards to be implemented in an on-line learning environment. Creation of the actual Standards-based content is the responsibility of the teacher, but this application will assist him or her in extending Standards-based teaching and learning beyond the confines of the classroom.

1.2 OVERVIEW OF LANGUAGE LEARNING SPACES

Reading, writing, listening and speaking are the four pillars of learning any new foreign language, and this thesis has implemented a wide variety of features in order to cover all four areas. Today’s students are more into the social networking world, and it would be easy and more fun for them if we teach new languages using these tools. This allows the individual not only to interact with other people with the same interests but also allows them to participate in various activities. Discussions play an important role in language learning. This application provides various tools through which students can participate in discussions
with each other on a vast number of topics which otherwise would not be possible in physical classrooms.

This thesis has been designed by consulting the National Standards of American Council on the Teaching of Foreign Languages (ACTFL) [9]. According to Language Testing International, language learners are divided into four major categories as shown in Figure 1.1 [9]. The novices are the once who are new to the language and have no or very little idea about it. Intermediate and advanced users are those who have already some basic knowledge of the language and are looking forward to polishing their skills. Superior users are the ones who have a very good understanding of the language and are exploring more in depth topics about the language. They can debate and defend their opinions. Table 1.1 shows the Standards for Foreign Language Learning [12] and tools which help students to engage in communicative tasks.

### Table 1.1. Standards for Foreign Language Learning

<table>
<thead>
<tr>
<th>Standard</th>
<th>Type</th>
<th>Text Blog</th>
<th>Video Blog</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Communication: Communicate in Languages Other Than English.</strong></td>
<td>Students engage in conversations, provide and obtain information, express feelings and emotions, and exchange opinions</td>
<td>TRUE</td>
<td>TRUE</td>
</tr>
<tr>
<td><strong>Standard 1.1</strong></td>
<td>Students understand and interpret written and spoken language on a variety of topics.</td>
<td>TRUE</td>
<td>TRUE</td>
</tr>
<tr>
<td><strong>Standard 1.2</strong></td>
<td>Student present information, concept, &amp; ideas to an audience of listeners or readers on a variety of topics.</td>
<td>TRUE</td>
<td>TRUE</td>
</tr>
<tr>
<td><strong>Cultures: Gain Knowledge and Understanding of Other Cultures.</strong></td>
<td>Students demonstrate an understanding of the relationship between the practices and perspectives of the culture studied.</td>
<td>TRUE</td>
<td>TRUE</td>
</tr>
<tr>
<td><strong>Standard 2.1</strong></td>
<td>Students demonstrate an understanding of the relationship between the products and perspectives of the culture studied.</td>
<td>TRUE</td>
<td>TRUE</td>
</tr>
<tr>
<td><strong>Connections: Connect with Other Disciplines and Acquire Information.</strong></td>
<td>Students reinforce and further their knowledge of other disciplines through the foreign language.</td>
<td>TRUE</td>
<td>TRUE</td>
</tr>
<tr>
<td><strong>Standard 3.1</strong></td>
<td>Students acquire information and recognize the distinctive viewpoints that are only available through the foreign language and its cultures.</td>
<td>TRUE</td>
<td>TRUE</td>
</tr>
<tr>
<td><strong>Comparisons: Developing Insight into the Nature of Language and Culture.</strong></td>
<td>Students demonstrate understanding of the nature of language through comparisons of the language studied and their own.</td>
<td>TRUE</td>
<td>TRUE</td>
</tr>
<tr>
<td><strong>Standard 4.1</strong></td>
<td>Students demonstrate understanding of the concept of cultures through comparisons of the language studied and their own.</td>
<td>TRUE</td>
<td>TRUE</td>
</tr>
<tr>
<td><strong>Communities: Participate in Multilingual Communities at Home and Around the World</strong></td>
<td>Students use the language both within and beyond the school setting.</td>
<td>TRUE</td>
<td>TRUE</td>
</tr>
<tr>
<td><strong>Standard 5.1</strong></td>
<td>Students show evidence of becoming lifelong learners by using the language for personal enjoyment and enrichment.</td>
<td>TRUE</td>
<td>TRUE</td>
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1.3 **Language Learning Spaces Users**

This application specifies three users, and each user has his specific role. Figure 1.2 shows the arrangement of users on the bases of their access rights by placing the administrator on the top with full application controls and student at the bottom with limited controls. The users are identified at the time of login. They can perform the following functions:

1. **Administrator**: The administrator is the super user of the application and has all the managerial power. The administrator can create new classes, add new teachers, edit any information in an existing class or teacher and make announcements. They can also easily update the user interface of the login page by using custom user controls.

2. **Faculty**: They are the instructors who manage their classes. They can set the level of the class to superior, advanced, intermediate, or novice. They can also add, edit or delete students from their class. Apart from this, faculty can participate in text blogging, picture blogging, video blogging, chat, and wiki.

   To implement the language learning standards (ACTFL), the faculty needs to identify their class level and provide appropriate functionality according to proficiency guidelines. Each class is given privileges that distinguish it from the rest. Tools like wiki and chatting are only provided to advanced and superior class users. Since these users have extensive knowledge of the language, they can contribute in writing or in editing wiki pages. Both advanced and superior class users can contribute in video blogs, and on the other hand, the picture blogging tool is open for advanced, superior, intermediate and novice class users. All users are allowed to contribute to text blogging.

3. **Student**: The student is the main end user of this thesis. Only registered students can access this application. As per their class level, they can either chat with the other students of the class or can contribute in text blogging, picture blogging, video blogging, adding new posts, and commenting on existing posts.

![Figure 1.2. Access privileges for users.](image)
1.4 Division of Labor

This thesis project is a combined effort of two Master of Science students. The whole project was divided into two equal parts, and in the end, it is combined together into one complete application.

The following are my contribution in this thesis:

- Text blogging.
- Video blogging.
- Administrative control panel.
- Teacher class settings.
- Designing of the web interface by using CSS and master pages.

Work contributed by Rahul Rana:

- Photo blogging.
- Chatting.
- Announcements.
- Template base user interface.
- Database design and implementation.
CHAPTER 2

TECHNOLOGY

2.1 .NET FRAMEWORK

The Microsoft .NET Framework is a platform for building applications that have visually stunning user experiences, seamless and secure communication, and the ability to model a range of business processes [13]. The .Net Framework supports multiple programming languages like C#, VB, C++, J#, Perl, etc, and each language can utilize code written in another language. The .Net Framework consists of two main components:

- Common Language Runtime: Provides an execution environment for program code with additional benefits like cross-language integration, garbage collection, self-describing objects, automatic resource management, etc [6]. Thus it provides the ability to compile once and run on any CPU and operating system that supports the runtime. This is shown in Figure 2.1.

- Base Class Library: The Base Class Library (BCL) is a standard library available to all languages using the .NET Framework (see Appendix for a list of abbreviations). It provides large number of common functions, such as file reading and writing, graphic rendering, database interaction, and XML document manipulation [3].

2.2 ASP.NET

ASP.NET is a web application development platform build on the top of .NET framework that allows programmers to create dynamic web sites, web applications, and web services. As the member of the .NET framework, ASP.NET is a very valuable tool for programmers and developers as it allows them to build dynamic, rich web sites and web applications using compiled languages like VB and C#.

Some of the advantages of using ASP.NET are:

1. It reduces the amount of code required to build large applications [8].
2. It offers built-in Windows authentication and per-application configuration, which makes the application safe and secured [8].
3. It provides better performance by taking advantage of early binding, just-in-time compilation, native optimization, and caching services [8].
4. The ASP.NET framework is complemented by a rich toolbox and designer in the Visual Studio integrated development environment [8].
5. The application provides simplicity from simple form submission and client authentication to deployment and site configuration [8].

6. The source code and HTML are together therefore ASP.NET pages are easy to maintain and write [8].

7. All the processes are closely monitored and managed by the ASP.NET runtime, so that if process is dead, a new process can be created in its place, which helps in keeping the application constantly available to handle requests [8].

8. It is purely server-side technology so, ASP.NET code executes on the server before it is sent to the browser [15].

9. Being language-independent, it allows developer to choose the language that best applies to the application or partition the application across multiple languages [8].

10. ASP.NET makes for easy deployment. There is no need to register components because the configuration information is built-in [8].
2.3 MICROSOFT OFFICE ACCESS

Microsoft Access is a relational database management system from Microsoft which is used for storing and manipulating the database. It provides all basic features such as create tables, queries, forms and reports, and connects them together with macros [10].

Some of the features which make Microsoft Access very successful for the web are:

- It is a member of the Microsoft Office suite of applications so no additional installation is required.
- Microsoft Access is very easy to use and work on.
- It is fast, secure and reliable.
- Connecting ASP.NET application to a Microsoft Access database is very easy and simple.
- In future administrator can easily upgrade database from Microsoft Access to Microsoft SQL Server.

Microsoft Access is a very efficient back-end environment which allows developer to focus on front-end technologies like ASP.NET. The connectivity between the front-end application and the back-end database is achieved by ADO.NET Technology.

2.4 ADO.NET

The Internet Information Services (IIS) provides the jet database engine for Microsoft Access databases. It is OLEDB-compliant and is supported by classes in the Microsoft .NET Framework System.Data.OleDb namespace [15]. Figure 2.2 shows the ADO.NET architecture. The main objects are:

- The OleDbConnection: The OleDbConnection object is used to handle the connection of the application to the Jet database engine [15].
- The OleDbCommand: The OleDbCommand object contains the SQL statements which are written inside the application. SQL statement is used to pull out the data from the database and show the result back to user [15].
- The OleDbDataReader: The OleDbDataReader object is used to read the records which are pulled out by the SQL statement [15].
- The DataGrid: The DataGrid object is used to display the records and helps in firing events for addition, deletion or updating of records [15].
2.5 ASP.NET Exception Handling

While developing and testing the application, the programmer cannot come to know about all the errors unless and until the application throws one. There are many situations when users make some wrong entry into the system and make the application to crash. Some common examples are null pointer error or divide by zero error or out of memory error. To handle these kinds of errors the programmer is required to implement exception handling at application level [7].

The three ways in which exceptions can be handled in ASP.NET applications are:

- Try-catch block.
- Error Events.
- Custom Error Page.

2.6 C# and VB.NET

C Sharp (C#) is an object-oriented programming language developed by Microsoft with the .Net framework. It is intended to be a simple, modern, general-purpose programming language [7].

Some features of C# which distinguishes it from other programming language:

- There is no concept of global variables or functions in C#. The static members of public class are temporary used as the global variables and functions [7].
- C# supports a strict Boolean data type [7].
- There is automatic garbage collection and hence release of memory which is no longer in use [7].
- Unlike other programming languages, C# has try-finally exception handling along with try-catch block [7].
- C# does not support multiple-inheritance but it allows a class to implement any number of interfaces [7].
- C# is more type safe as compared to C++ [7].

Visual Basic .NET (VB.NET) is an object-oriented programming language which is implemented on the Microsoft .NET Framework. It is widely used to develop both windows and web applications [16].

Some of the key features of VB.NET are:
- Structured error handling capabilities at method level, page level, application level and website level [2].
- Access to .NET Framework [2].
- The development of VB.NET is done using a powerful Integrated Development Environment (IDE) provided by Microsoft [2].
- Inherent support for XML & Web Services [2].
- Within an application VB.NET is compatible with other languages like C# [2].
- With the help of ADO.NET, we can easily connect the VB.NET application to maximum databases [2].
- Automatic garbage collection managed by common language runtime (CLR) [2].
- Code Access security has being introduced in VB.NET which helps in building robust, stable and secure applications [2].

2.7 CSS

CSS stands for Cascading Style Sheet. It helps in defining the ‘look and feel’ of the web pages. The CSS is designed to isolate the page styling from the web page code by placing the CSS code in as separate file. The CSS files are saved with .css extension. The CSS is implemented by specifying the property and value of ASP.NET code. The benefits of CSS are that you are only required to make changes at one place and it will automatically update the complete application. It provides more flexibility and control to web pages by presenting it in different styles [4].
2.8 Microsoft Visual Studio – 2008

Microsoft Visual Studio in an integrated development environment (IDE) design and developed by Microsoft. It was first introduced in 1997 [11]. Some of the key features of Microsoft visual studio are:

- **Code Editor:** Like any other IDE Visual Studio supports multiple programming languages like C/C++, VB.NET, C#, F#, J#, Python, Ruby, etc. It helps developer with syntax highlighting and code compilation using IntelliSense [11].

- **Debugger:** Visual Studio includes debugger which works both with managed code as well as native code and can be used for debugging application written in any language supported by visual studio [11].

- **Designer:** Visual Studio contains multiple designing tools. Some of the common designing tools are windows form designer, WPF designer, WCF designer, web designer class designer, data designer, mapping designer, etc. Each of these tools is having their special feature that helps developer in designing application quickly and effectively [11].

Microsoft Visual Studio is use to develop both desktop and web based application. With the help of rich code editor, the development with Visual Studio is very quick. The in-built ASP.NET controls, helps in developing an eye-catching application with lots of functionality and very little code at the back end. The deployment of application is also very easy with Visual Studio as it automatically creates the configuration files [11].
CHAPTER 3

SYSTEM ARCHITECTURE

The .NET framework and Visual Studio provides many choices in choosing the right architecture for the development of an application. In this thesis project, we have adopted three-tier architecture as shown in Figure 3.1. This architecture provides presentation and application logic on the client side, application and business logic on the application server and data logic on the database server.

Figure 3.1. Three-Tier system architecture.
The presentation layer is the top most level of the application. It is the interface which provides announcements, blogging, chatting, wiki, class settings, teacher settings, and student settings. The purpose of this layer is to get the data from the user and show the relevant result back to the end users. The most part of this layer is implemented in ASP.NET web pages using Ajax.

The business layer is built on the top of .NET framework. It stands between the presentation layer and data layer. The logic of the application is placed inside the business layer, hence it helps in making this logic reusable across the application. All the features are implemented in C# and VB.NET language. In this layer we implement the functionality to transfer data between the application and the database.

The data layer is the third and last layer of the architecture. It is the heart of any application as it provides data to the presentation layer. The data is saved inside the database and is neutral and independent of business layer logic. For our thesis project we have designed and implemented our database logic in Microsoft Office Access.
CHAPTER 4

DESIGN OF BLOGGING TOOLS

Any social networking web-application consists of a number of tools which help users to interact with others and share their ideas. This chapter covers two main social networking features of the application:

- Text Blogging: This tool helps users to post text blog in the application. Any student who is enrolled in the class or the teacher/faculty of that class can read the blog, edit the blog, add comments on the blog, read other users comments, search on a particular topic and can also read old blogs which have been properly archived in the system.

- Video Blogging: This tool is an extension to the text blogging. An additional feature of video blogging is added to text blogging. With the help of this tool users can share their videos with the class.

4.1 REQUIREMENT SPECIFICATION OF BLOGGING

Before designing any application, the first step of software engineering is to do a requirement and analysis of the project. In this process we gather all the functionality and constraints that the end user of the application expects from the system. Following are the requirements needed to design a blog:

- All users can read a blog.
- All users can post a blog.
- Users can delete a blog.
- Blogs should have a title as a required field.
- Blogs should display the date of post.
- Blogs should have tags.
- Blog’s pagination should be implemented.
- Blog should allow links to other websites.
- Blogs should be in descending order of the post date.
- Comments should be in the ascending order of the post date.
- The blog editor should provide all the basic functionality of text editing and text formatting.
• All users should have the option of either saving the incomplete blog as draft or publishing the final copy on web.
• All users can read comments on blog.
• All users can add comments on blog.
• Users can delete comments from blog.
• Comments should display the commenter name and date of post.
• The total number of comments should be displayed along with the comment link.
• Archiving of old blogs is required.
• All users can search for blogs.

4.2 DESIGN OF BLOGGING

After gathering all the requirements of the blogging tool, the next step of software engineering is to start up with the designing. The blogging functionality is implemented by creating our own custom user controls in ASP.NET. The main advantage of using this control is that you need to create it once and can reuse this control at multiple places in the application. They can easily be embedded inside the ASP.NET web pages and helps in saving lots of development time and makes the code clean and simple. These controls are saved with the .ascx extension. Figure 4.1 shows the integrating of blog control into ASP.NET web page.

![Figure 4.1. Design of blogging.](image)

The design of blog is kept very clean and simple. As shown in Figure 4.2 and Figure 4.3, all the tools such as add new blog, archiving, tagging and searching are integrated into right side of the page, and the center panel is reserved for the blogs and comments. The pagination is implemented at the end of the pages, which helps in continuing to be able to add new blogs in the central panel without disturbing the left and right tool panels.
Figure 4.2. The text blogging page.

Figure 4.3. The video blogging.
4.3 IMPLEMENTATION OF BLOGGING

The blogging feature is the backbone of our application. Its functionalities are implemented by designing a custom user control in ASP.NET as shown in Figure 4.1. They are specific to the class and managed by the administrator or teacher of that class. This thesis covers two type of blogging:

- Text Blogging.
- Video Blogging.

4.3.1 Text Blogging

The text blogging is shown in Figure 4.2. The following are the functionalities which are implemented in the text blog.

- Read text blog.
- Add text blog.
- Read comments.
- Add comments.
- Archiving.
- Tagging.
- Searching.

4.3.1.1 READ TEXT BLOG

This is the first place where the user landed after hitting the text blog button from the left hand menu panel. All the blogs are arranged in the descending order of the post date with the latest blog always on the top. All the registered user of the class can read any posting specific to that class.

Some of the features as per our blogging requirements can be seen in the Figure 4.4. Every blog starts with the title. The title defines the topic of the post. The title is followed by the date and time. After this user can check the status of the post whether it is being published or still under draft. The body of blog comes next. Inside the blog you can have multiple links which are pointing to other web-sites and helps reader in detail understanding of the concept. The blog is independent of the number of characters, paragraphs or page size.
At the end of each blog, there is an edit and delete post link. Any registered user of the class can edit or delete the post. The user can also check the tags of the blog and can see the total number of comments on the blog. There can be multiple comments on a blog and all comments are saved in the ascending order of the post date. The pagination is implemented on the blog web-page, and it can hold maximum ten posts at a given time. The next and previous navigating buttons are placed at the end of page in order to traverse between the pages.

4.3.1.2 ADD TEXT BLOG

Blogging is specific to the class, and both teacher and students can add text blog. To start a new blog, the user selects add new post link from the right hand control panel and it redirects to the add text blog page as shown in Figure 4.5. On this page, the user can start up new text blog by filling in the blog title. The date and time are automatically filled by the system in the post date textbox. The user can also add tags to the blogs, and from the dropdown list the user can select the option of saving blog as draft or publish it on web.

The application uses TinyMCE text editor [14]. TinyMCE is a platform independent web based Javascript HTML WYSIWYG editor control released as open source under LGPL by MoxiecodeSystemsAB [14]. This editor provides all the functionality like text editing, adding hyperlinks, text formatting and text styling.

At the end of the page, we have save link and cancel link. On the click of save button all the data are stored inside the database. The application wraps the blog text inside the
HTML tag. This helps in saving the formatting and placement of text into the database. The cancel link cleans up the complete form and redirect users to the read blog page.

4.3.1.3 READ COMMENTS

The ability of readers to leave comments on the blogs makes learning more interactive and helps in distinguishing it from other static website. The registered users of the class can read any comments as shown in Figure 4.6. The comments are placed at the end of each blog and start with commenter name and date of post. The comments are arranged in ascending order of date of post with the oldest on the top and latest in the end.

4.3.1.4 ADD COMMENTS

The new comment can be added by clicking on the post a new comment button which is placed at the end of each blog as shown in Figure 4.6. Any registered use of the class can leave comments on the blog. This kind of informal discussion helps in making lectures more interactive by encouraging language learners to put new ideas in front of the class. In the add comment window, the name textbox is automatically filled by the system as shown in Figure 4.7.
4.3.1.5 **TEXT BLOG ARCHIVING**

The archiving is one of the key requirements of any blog. It helps in organizing the old posts in a systematic order. The archiving can be implemented in multiple ways. The Figure 4.8 shows the archiving of previous posts inside the right control panel. The blogs are archived according to their date of post and are arranged in the descending order of the year and month. At any given time the user can read all the blogs and comments of any month.
4.3.1.6 TEXT BLOG TAGGING

Inside the right control pane, tagging comes after archiving. Tagging is also another important feature of text blogging. There are two main advantages of using tags. Firstly, they categorize the blogs and help in organizing them. Users can create multiple tags per blog, and each tag can point to many blogs. Secondly, they help in quickly retrieving the relevant result. Because of proper tagging of blogs, one will always get the right result even if the title is poorly defined.
4.3.1.7 TEXT BLOG SEARCHING

The last and another important feature of the text blog is searching. Searching comes into action when the user is not able to find the keyword inside the tag list. The search control scans the complete database and pulls out the relevant result. Thus this control helps reader in pulling out any topic of their interest.

4.3.2 Video Blogging

The video blogging is a form of blogging in which medium is video. It inherits all the existing features of text blog such as reading blogs, adding comments, archiving, tagging, and searching. Figure 4.3 shows the video blog page. Video blogging is specific to the class and only the registered users can view or upload videos in that class. The video blogging helps language learners to share their experience regarding the language, art, culture or tradition with the class. The readers can watch the video and leave comments in the end. Thus this way of interactive learning helps students in quickly understanding of the concepts. All the videos are properly archived inside the system. The tagging on the videos helps in organizing of blogs and the searching control helps in quickly finding the relevant result from the database.

To start a new video blog, users can either upload the video from their system or can add the url (Uniform Resource Locator) of videos from other video streaming web-sites. As shown in Figure 4.9, user can set the dimensions and can preview the video before uploading.
Figure 4.9. Video blog: upload video.
CHAPTER 5

DESIGN OF CONTROL

This chapter showcases the control panel of the application for both administrator and teacher/faculty. As shown in Figure 1.2, the administrator sits on the top of the hierarchy and has access to the complete application. On the other hand, the teacher can control the class and the students who belong to their class only. Hence, on the basis of meeting different users’ needs, the application setting tool is divided into two parts:

- Administrator control panel.
- Teacher control panel.

In this chapter we will cover both users independently and will discuss their design and functionality.

5.1 REQUIREMENT SPECIFICATION OF CONTROL TOOL

Every user has their different needs and requirements. The control panel tool is designed for administrator and teacher/faculty only. Since the administrator needs to monitor the complete application, and the teachers are only required to manage their classes, we will be discussing their requirements separately.

5.1.1 Administrator Control Panel Requirements

The following are the requirements need for the designing of administrator control panel.

- Administrator required its separate home page from where he can monitor the complete web-application.
- View all teachers in the system.
- Add new teacher to the system.
- Edit information of the existing teachers.
- Remove the teacher.
- View all active and inactive classes in the system.
- Add new class to the system.
- Edit the existing class settings.
- Deactivate the class.
- Assign classes to teachers.

### 5.1.2 Teacher Control Panel Requirements

The following are the requirements for the designing the teacher control panel:

- Embedded teacher control panels inside the relevant page.
- Set up class level and class description.
- View all student information.
- Add new student to the class.
- Edit the information of the students.
- Deactivate students from the class.

### 5.2 Design and Implementation

The requirement specification of both administrator and teacher/faculty are different. As can be seen in Figure 5.1, the administrator requires a different home page from where he can manage all the classes and teachers settings. On the other hand, Figure 5.2 illustrates that teachers require the option of class settings inside their page. In the coming topics, we will discuss the design and implementation of both administrator and teacher/faculty control panel.

#### 5.2.1 Administrator Control Panel Design

In the administrative control panel, we will be discussing about the teacher setting page and class setting page.

##### 5.2.1.1 Administrative Setting Page

The Figure 5.1 illustrates the design of administrative setting page. After successfully logging into the system, the administrator landed on this page. Over here administrator has all the options to manage the design and users of the application. The first two settings options of this page were designed by my other thesis partner, and next two components are part of my contribution towards this thesis.
Figure 5.1. Administrator home page.

Figure 5.2. Teacher home page.
5.2.1.2 Teacher Setting Page

After selecting the teacher setting link from the Figure 5.1, the administrator lands on the view all teachers page as shown in Figure 5.3. This table is designed using data grid control of ASP.NET. Administrator can arrange the order of teachers by clicking on the header elements like name or email or user-id. The administrator can update existing teacher information by selecting the edit link. Here it allows the administrator to edit all information of the teacher and set the status of teacher to active or inactive.

![Teacher Setting Page](image)

Figure 5.3. Administrator teacher setting page.

5.2.1.3 Add New Teacher Page

At the end of teacher setting page as shown in Figure 5.3, there is a button to add new teachers to the system. On the click of this button a new form opens up which is shown in Figure 5.4. In order to add new teacher to the system, the administrator is required to fill out the teacher information. The password for the teacher is automatically generated by the system. We can add multiple teachers to the system by selecting save and next button or can enter single teacher entry by clicking on the save button.

5.2.1.4 Class Setting Page

After selecting the class setting link from the Figure 5.1, the administrator lands on the view all classes page as shown in Figure 5.5. On this page administrator can view the list
Figure 5.4. Administrator add teacher page.

Figure 5.5. Administrator class setting page.
of all the classes in the system. He can read the class description, language taught, class level, class status, and teacher of the class. Administrator can also edit this information by selecting the edit link in the table or change the order of class list by clicking the header link.

5.2.1.5 Add New Class Page

At the end of class setting page as shown in Figure 5.5, there is a button to add new classes to the system. In the click of this button, a new form opens up, which is shown in Figure 5.6. The administrator is required to fill in the class name, class description, class language, and class level. Before hitting the save button, he needs to assign a teacher to the class by selecting it from the dropdown menu. The administrator can start multiple classes by hitting save and next button or add single class by selecting save button.

![Figure 5.6. Administrator add class page.](image)

5.2.2 Teacher Control Panel Design

The teacher control panel helps teacher/faculty in managing their class and students of that class. Each teacher has their own setting tool for their class. The teachers can enter their setting page by selecting the class setting button from the left menu as shown in Figure 5.2. After entering the class setting page, the teacher can view the class information. He is not allowed to change the class name or class language, but he can edit the description and
change the level of class as shown in Figure 5.7. By changing the class level, the teacher can add or remove social networking tools such as blogging, chatting, or wiki from the class.

![Teacher class settings step 1](image)

Figure 5.7. Teacher class settings step 1.

After this teacher can either save the changes and move to next page or cancel everything and return to his class home page.

The second page of the class settings is designed by my thesis partner. In the end the teacher can manage students of the class as shown in Figure 5.8. On this page, the teacher can view the details of all the students and can edit the information of any student by selecting the edit link. He can also add new students to the class by selecting add new student button or can remove any existing student by disabling their status.
Figure 5.8. Teacher class settings step 2.
CHAPTER 6

DESIGN AND STYLING OF THE APPLICATION

In this chapter, we will take a look at the design for the web application. Designing plays a very important role in the making of a web-site. Many sites fail to attract users just because of their poor user interface. So while designing this application, one of our main concerns was towards the creation of a simple and eye catching user interface. To achieve this objective we have used following two techniques:

- Design of master page.
- Use of CSS for styling.

6.1 MASTER PAGE

The concept of master pages was introduced in ASP.NET 2.0. The master page helps in building a consistent and maintainable layout for the pages throughout the application. Figure 6.1 displays the concept of the master page in our application. The design of the master page is kept very clean and simple. The background color of the application is kept white which helps in increasing the readability. On the left side we have all the menu buttons of the application. The logo and the thesis title are placed in the header and LARC’s signature in the footer. Thus this master page helps in defining the consistent look and feel of the application.

The Figure 6.1 tries to explain the integration of master page with the content pages. We cannot run the master page along in the browser. When every user enters the application URL in the browser, the master page is merged with the content page and shows the final page to the user. Some of the advantages of using a master page are that, it helps in keeping the code clean by centralizing the common functionality, that it is easy to implement and that it is easy to change the look and feel of the application.
CSS stands for cascading style sheets. It helps in defining the display of the web page. With the help of CSS we can set the style of the element by picking it as the selector and declaring its CSS properties and values. In our application all the CSS files are saved inside the skins folder with .css extension.

The CSS separates the style and layout from the code and saves it at one place in an external file. The benefits of using this approach is that you are only required to make changes at one place, and it will automatically update the complete application. The following style shown below sets the font size and font weight for all the three kind of header. If we change anyone of these properties, it will automatically update the header style on all web pages.

```css
h1 {
  font-size: 2.0em;
  font-weight: normal;
}

h2 {
  margin: 20px 0px 8px 0px;
}
```
font-size: 1.4em;
font-weight: normal;
}

h3 {
margin: 10px 0px 8px 0px;
font-size: 1.2em;
font-weight: normal;
}
CHAPTER 7

CONFIGURATION TESTING AND CONCLUSION

The application is developed using Microsoft Visual Studio 2008. Since this is a web based application, no installation is required at the client end. In this chapter we are going to cover the process of installation and configuration of the application on server and its testing.

7.1 CONFIGURATION

The installation environments for the language learning spaces are:

- Windows Server 2003 with service pack-2 and above or windows vista or windows 7.
- .NET Framework 2.0 or above.
- Internet Information Services (IIS -7) or above.
- Microsoft Office Access 2003 or above.

The application can be deployed on the server by placing the complete project folder inside the ‘\IIS\wwwroot’ directory. Next the developer must go inside the IIS, and under the default website category, he or she will create a new site and browse the application location to the Wwwwroot directory.

7.2 TESTING

Testing is the most important part of software development life cycle. The testing is implemented once the control is finalized. This time is used to check all the functionalities and behavior of the control. Testing generally includes checking of all the links and buttons, placement of text and controls, browser compatibility, interactivity of the application with the database, validation of text on the page, and fulfillment of all the user requirements. Once the application had been tested on the local machine, we then deployed our code onto the server and once again repeated all these steps.

7.3 CONCLUSION

As the name suggests, this thesis tries to introduce new web-based learning techniques by allowing content creators to follow the National Standards published by the
American Council on the Teaching of Foreign Languages (ACTFL) and the ACTFL proficiency guidelines which are mentioned in Figure 1.1 of this thesis. We tried to make language learning more interactive and enjoyable for students and teachers alike by introducing specific social media tools such as text blogging, photo blogging, video blogging, and chatting to encourage students to engage in communicative acts (interpretive, interpersonal, and presentational). This application is designed using the custom user control in ASP.NET which helps in easy update of site content and user interface.
CHAPTER 8

FUTURE DIRECTION AND SCOPE

Software development is never ending process. Our thesis project offers a comprehensive package for the learning of a foreign language through social media. Due to time constraints, we were not able to implement a few of the features, but we hope they will be addressed in the future.

- Wiki: Wiki is a web-encyclopedia which allows easy creation and editing of web pages. The addition of wiki will help language learner to quickly read any topic of their interest and refer the link of that wiki page into their blogs.

- Globalization: The Language Learning Spaces is a language learning web application, so it would be great to see the globalization of the application and is kept as future enhancement.

  Video chat: It was beyond the scope of the project to implement video chatting inside the browser. By implementing this functionality, the users can read, write, speak, listen and express there thought through the facial expressions. It will help language learners in quickly learning of language by interacting with one other.
BIBLIOGRAPHY


APPENDIX

ABBREVIATIONS
Table A.1. Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>LARC</td>
<td>Language Acquisition Resource Center</td>
</tr>
<tr>
<td>HTML</td>
<td>Hypertext Markup Language</td>
</tr>
<tr>
<td>CLR</td>
<td>Common Language Runtime</td>
</tr>
<tr>
<td>BCL</td>
<td>Base Class Library</td>
</tr>
<tr>
<td>AJAX</td>
<td>Asynchronous Java Script and XML</td>
</tr>
<tr>
<td>CSS</td>
<td>Cascading Style Sheets</td>
</tr>
<tr>
<td>Admin</td>
<td>Administrator</td>
</tr>
<tr>
<td>API</td>
<td>Application Programming Interface</td>
</tr>
<tr>
<td>MSDN</td>
<td>Microsoft Development Network</td>
</tr>
<tr>
<td>ASP</td>
<td>Active Server Pages</td>
</tr>
<tr>
<td>C#</td>
<td>C Sharp</td>
</tr>
<tr>
<td>VB</td>
<td>Visual Basic</td>
</tr>
<tr>
<td>PC</td>
<td>Personal Computer</td>
</tr>
<tr>
<td>IIS</td>
<td>Internet Information Server</td>
</tr>
<tr>
<td>HTTP</td>
<td>Hypertext Transfer Protocol</td>
</tr>
<tr>
<td>W3C</td>
<td>World Wide Web Consortium</td>
</tr>
<tr>
<td>SDK</td>
<td>Software Development Kit</td>
</tr>
<tr>
<td>IDE</td>
<td>Integrated Development Environment</td>
</tr>
<tr>
<td>SQL</td>
<td>Structured Query Language</td>
</tr>
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</table>