DESIGN AND DEVELOPMENT OF

WEB - BASED INSTRUCTION DEVELOPMENT TOOL

CHANATTHA THONGSUK

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DESIGN AND DEVELOPMENT OF WEB-BASED INSTRUCTION DEVELOPMENT TOOL

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ABSTRACT

A web-based instruction development tool was developed to help instructors create websites for learners limited by time or place available for learning.

Microsoft Visual Basic .Net (VB.Net), Microsoft Active Server Page .Net (ASP.Net) and Microsoft Access 2003 were selected for development in this research.

The system has two subsystems,

1. Web-Based Instruction Development Tool: Builder System

This subsystem was developed for use by the instructors to create websites using existing template files to create a new content file. The system supports 5 file format creations, they are Rich Text Format (.rtf), Hypertext Markup Language (.html), Microsoft Word (.doc), Microsoft PowerPoint (.ppt), and Portable Document Format (.pdf).

The Web-Based Instruction Development Tool can be used to convert rich text format, word documents (.doc) and presentation files (.ppt) to a html format file (.html). The html format file will be shown on the website instead of the original resource to avoid copying from a third party.

2. Website: Brower System

The information shown on a website is that which is necessary, such as Chapter, Topic Description, File Name, Download Button, View Button, etc. The Download Button is used to open or download files. The View Button is used to display a file in html format.

KEY WORDS: INSTRUCTION DEVELOPMENT TOOL / E – LEARNING DEVELOPMENT TOOL / WEB BUILDER / E-LEARNING BUILDER / ON – LINE EDUCATION

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การออกแบบและพัฒนาเครื่องมือที่ใช้ในการพัฒนาระบบการเรียนการสอนผ่านเครือข่ายอินเตอร์เน็ต

(DESIGN AND DEVELOPMENT OF WEB-BASED INSTRUCTION DEVELOPMENT TOOL)

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บทคัดย่อ

การออกแบบและพัฒนาเครื่องมือที่ใช้ในการพัฒนาระบบการเรียนการสอนผ่านเครือข่ายอินเตอร์เน็ต (DESIGN AND DEVELOPMENT OF WEB-BASED INSTRUCTION DEVELOPMENT TOOL) ช่วยให้อาจารย์ผู้สอนใช้ในการสร้างระบบการสอนผ่านเครือข่ายอินเตอร์เน็ตเพื่อลดข้อจำกัดด้านสถานที่และเวลาในการเรียนรู้

การพัฒนาระบบการสอนผ่านเครือข่ายอินเตอร์เน็ตนี้ใช้ Microsoft Visual Basic .Net (VB.Net), Microsoft Active Server Page .Net (ASP.Net) ในการพัฒนาระบบ และใช้ Microsoft Access 2003 เป็นฐานข้อมูล

เครื่องมือของระบบสามารถช่วยผู้สอนพัฒนาระบบการเรียนการสอนผ่านเครือข่ายอินเตอร์เน็ตโดยใช้ข้อมูลที่มีอยู่ หรืออาจสร้างข้อมูลขึ้นมาใหม่ ซึ่งระบบสามารถรองรับได้ทั้งหมด 5 ประเภท คือ ไฟล์ประเภท Rich Text Format (.rtf) , ไฟล์ประเภท Hypertext Markup Language (.html) ,ไฟล์เอกสารของโปรแกรม Microsoft Word (.doc) , ไฟล์นำเสนอของโปรแกรม Microsoft PowerPoint (.ppt) และไฟล์ประเภท Portable Document Format (.pdf)

ระบบสามารถแปลงไฟล์ประเภท Rich Text Format (.rtf), ไฟล์เอกสารของโปรแกรม Microsoft Word (.doc) และไฟล์นำเสนอของโปรแกรม Microsoft PowerPoint (.ppt) ให้อยู่ในรูปแบบของ HTML (.html) เพื่อแสดงบนระบบการเรียนการสอนผ่านเครือข่ายอินเตอร์เน็ตเพื่อหลีกเลี่ยงการใช้โปรแกรมที่มีลิขสิทธิ์

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CONTENTS

CONTENTS (CONT.)

CONTENTS (CONT.)

LIST OF TABLE

Page

Table

LIST OF FIGURES

CHAPTER I
INTRODUCTION

1.1 Background and Problem Statement

At the present time, Internet technology plays an important role in information system development. People tend to use the internet more and more for many purposes such as education, communication, entertainment, etc. Since Internet can solve problems of place and time limitation, it enables people to communicate with each other without boundary.

In education, the internet acts as a means to access many interesting information such as books, journals, magazines etc. Students can easily access to information for their learning at any place and any time, using tool for learning on internet. This activity is usually called ***E-Learning.***

Typically, in the E-learning environment, the instructions are located in the World Wide Web. The Student might access to those instructions no matter wherever they live or whatever time they’re in.

In a new instruction pattern, instructors can create interactive course by combining technologies such as animations, streaming video with other media such as e-mail, listservs, and chat rooms. Students of this course will have options for both synchronous (at the same time) and asynchronous (not simultaneous) learning environments.

Nowadays, problems of most instructors are that they are lack of sufficient technology skill and knowledge to create website. Thus, the proposed system will provide tool for helping instructors to create website more conveniently.

1.2 Objective

The objectives of this study are to investigate, design and construct the courseware of Web-Based Instruction Development Tool. The content management system is expected to be implemented.

1.3 Scope of Study

1.3.1 The proposed system will be developed to support Rich Text Format, Hypertext Markup Language, Microsoft Word, Microsoft PowerPoint, and Portable Document Format. The proposed system also provides the capability to create learning content from the existing files.

1.3.2 Build Rich Text Format (RTF) editor that could be used to convert the RTF file to be the Hyper Text Markup Language (HTML) file.

1.3.3 The instructor can convert pre-built Microsoft Word and PowerPoint files into the Hyper Text Markup Language (HTML).

1.3.4 The created-lessons can contain multiple media types.

1.3.5 The proposed system provides wizard function that can generate course syllabus from template. The additional function is a wizard to create subject's reference.

1.4 Expected Result

The functional web-based instruction development software which will be used by the instructors to create their instruction websites.

CHAPTER II
LITERATURE REVIEW

2.1 Relative Theory

2.1.1 Sharable Content Object Reference Model (SCORM)

SCORM **[1]** is the harmonized set of guidelines, specifications and standards based on the work of several distinct e-learning specification and standard bodies. These organizations continue to work with the Advanced Distributed Learning (ADL) initiative, developing and refining their own e-learning specification and standard and helping to build and improve SCORM. The Joint ADL Co-Lab provides the US Military and Joint service organizations guidance to implement SCORM.

SCORM has defined the technical foundations of a Web-based learning environment. At its simplest, it is a model that refers to a set of interrelated technical specifications and guidelines designed to meet high-level requirements for both learning content and systems. SCORM describes a "Content Aggregation Model (CAM)" and "Run-Time Environment (RTE)" for learning objects to support adaptive presentation of content, bases on criteria such as learner objectives, preferences and performance.

SCORM targets the Web as a primary medium for delivering instruction. It assumes that anything that can be delivered via the www. This makes the high availability to both instructors and learners. They might use the web as a medium of learning environments. SCORM platform made the contents development pretty easier than ever because of the growing internet community. The Web itself is becoming a universal delivery medium. Building upon existing Web standards and infrastructures, SCORM enables developers to focus on effective learning strategies.

First released in January 2000, the SCORM continues to update and expand the scope of the specifications through cooperation with industry, government and

academic participants.

Today SCORM is a collection of specifications and standards that can be viewed as separate "books", integrated together into a growing library. Nearly all of the specifications and guidelines are taken from other organizations. These technical "books" are presently grouped under three main topics: "Content Aggregation Model (CAM)," "Run-Time Environment (RTE)" and "Sequencing and Navigation (SN) (introduced in SCORM 2004)." Additional specifications are anticipated in future SCORM releases.

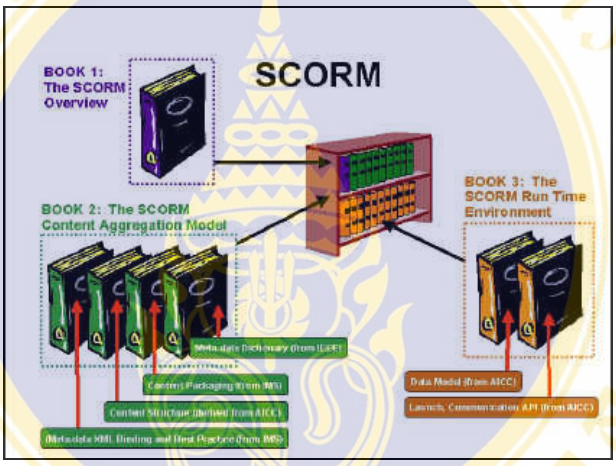


Figure 2.1 Three main topics of SCORM

Determining a Sharable Content Object (SCO)

A Sharable Content Object is a collection of one or more assets that represent a single learning resource utilized the SCORM Run-Time Environment (RTE) to communicate with Learning Management Systems (LMS). A SCO represents the lowest level of granularity of a learning resource which is tracked by an LMS. The figure below shows an example of a SCO. The displaying SCO is composed of several assets -- note that the technologies depicted are provided as examples. SCORM does not specify any particular schema, format, or template for the content itself.

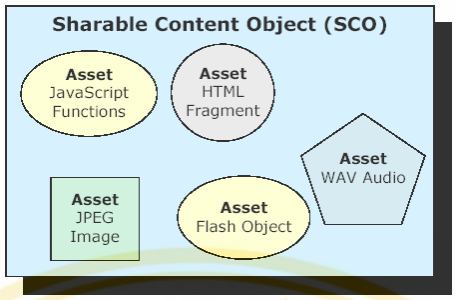


Figure 2.2 Sharable Content Objects (SCO)

SCOs are intended to be subjectively small units. When determining the size of a SCO, the smallest logical size of content should be tracked and considered. Requirements and other factors impact decisions on size of SCOs for service or joint organizations. Other factors are how much information is required to achieve a learning outcome or the point where a branching decision is required for sequencing, etc.

Sharable Content Objects Communication

The SCORM Run-Time Environment Data Model defines a set of data model elements. The data model elements are be used to communicate information from a SCO to a Learning Management System (LMS). This set of data includes, but is not limited to, information about the learner, interactions that the learner had with the SCO, objective information, success status and completion status. This information may be vital for many purposes. SCORM does not state how the LMS processes the communicated information. This data can be used to track the learner's progress and status, aid in sequencing decisions and report on the overall learner interaction with the SCO.

Meta-data

Simply defined, meta-data is the data which describes data. It is "meta" because it would be applied to anything we want to reference, point to, locate, or re-use. Meta-data provides a standard way to describe content artifacts for purposes, providing

sharing and reusing. Structuring descriptive information in a common format, software can be designed to efficiently and effectively.

Application Profiles

The application profiles is SCORM, describes how meta-data is applied to each of its instances:

- Content Aggregation
- Content Organization
- Activity
- SCO
- Asset

The SCORM Content Aggregation Model Book will describe the mandatory and optional meta-data fields for each of these application profiles.

Content Packaging

A Content Package, in a general sense, bundles content objects with a content organization which is described in a manifest. A SCORM Content Package may represent a course, lesson and module. It might be a collection of related content objects. The manifest, an essential part of all SCORM Content Packages, is defined in an Extensible Markup Language (XML)-based file, named “imsmanifest.xml”. This file describes the contents of the package and may also describe an optional description of the content structure.

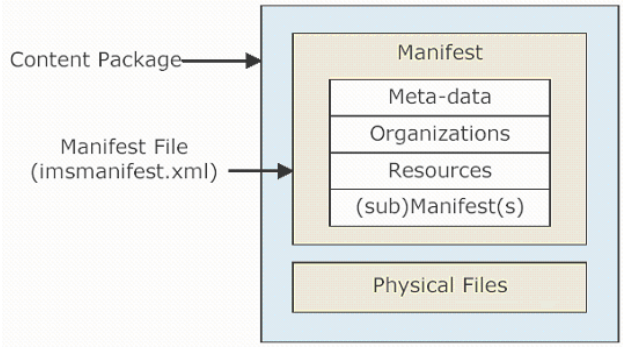


Figure 2.3 Four major sections of manifest

The Manifest file represents the information needed to describe the contents of the package. The manifest is composed of four major sections:

- **Meta-data** - data describing a designated content package.
- **Organizations** - contains structure or organization of the learning resources which might be a stand-alone unit or units of instruction.
- **Resources** - defines the learning resources bundled in the content package
- **(sub)Manifest(s)** - describes any logically nested units of instruction (which can be treated as stand-alone units)

The Physical Files are the actual learning content, media, assessment, and other associated files.

Content Packages can be constructed using one of two different formats known as application profiles. The application profiles and their definitions are described as follow:

- **Resource Package Application Profile** - A content package to bundle a set of learning resources with undefined organization resources (SCOs and Assets). These learning resources **do not have** any relationship.
- **Content Aggregation Package Application Profile** - A content package to bundle a set of learning resources, their static structure and sequencing requirements (i.e. the manifest contains 1 or more organizations of the learning resources).

2.1.2 Learning Management System (LMS)

Learning Management System (LMS) **[2]** enables students to work with electronic teaching materials, join online courses, do examinations, and communicate with other students or instructors. LMS consists of several components, represents different services to be used within a learning environment such as like presentation, administration of online courses handle examination and assessment functionalities. An important requirement described by [Rosenberg, 2001] is the integration of external knowledge management resources into LMS. It seems obvious that digital libraries (DL) are predestinated for this purpose because materials of many digital libraries are valuable for learning.

2.1.3 Learning Content Management System (LCMS)

Learning Content Management System (LCMS) [3] is an emerging product category, focuses on controlling, organizing the work flows and resources of content management as well as personalizing the delivery. They try to fill the gap between authoring tool and LMS functionality with its own sophisticated structure. Various multimedia authoring tools may be used to create animation, graphics, HTML pages and audio or video assets. Those medias are plugged into the online learning content. Multimedia and information assets are then organized into small modules of instructional sequences called learning objects. Many instructional design models may be applied in the construction of learning objects. These learning objects are then organized into sequences and combined with other forms of content. They might be integrated assessment items in order to fulfill a larger organizational objective, such as training on a new software version or customer service procedures. The sequencing function supports creating and delivering different learning programs based on factors including the audience, job role, prior experience and experience. This personalization function is a key to delivering a precise, relevant and targeted learning experience.

Learning Content Management System (LCMS) play a crucial role to help organizations to build a common and centralized repository of sharable learning content which might be accessed by its creators and consumers throughout the enterprise. An advanced LCMS could manage disparate sets of learning opportunities ranging from online to offline, from self-paced to collaborative. A Web-enabled LCMS is critical to index, organize, categorize, deploy and search the offered learning content which may physically heterogeneous located and distributed over several servers.

In contrast, LCMS manages users and communities (registration, assignment, approvals and reports) offers a learner search and launch learning resources independently. The LCMS renders contents and tracks learners' bookmarks, annotation, progress and test scores. So it can be sent back to the LMS for reporting purposes. Together, a LMS and LCMS deliver a complete learning solution. Learning content management systems differ in levels of flexibility, ability to integrate with

other LCMS and might provide unique characteristics. However, they tend to share the following characteristics:

Centralized repository

A key attribute of a LCMS is the use of a repository, a structured data storage system. It's used to track and organize online learning content. A centralized repository allows the organization to put an arm around all the learning opportunities throughout the enterprise, even when they may be physically located in distributed locations. The repository needs to support multiple type of contents such as documents, rich multimedia content and streaming data.

Tagging and search

Tagging and indexing the content ensures meaningful searching results. Each piece of learning content is tagged with meta-data (name, author, date, job, skill, etc.); they could be appropriately and consistently efficiently searched by both the content creators and consumers on the network.

Shared and reusable resources

According to the Advanced Distributed Learning (ADL) initiative. Studies and field experience indicated that an environment where designers can share, reuse and easily modify shared media resources can save from 30 to 100 percent of the time and also reduce the cost of content development. Many LCMS environments allow to reuse specific elements such as like navigation bars, backgrounds and tables of contents, and allow use to modify these elements to support a specific application or objective.

Reusable learning objects

A complete LCMS provides the ability to manage content not just in a monolithic course format, but also allow users to deal with a lower level of granularity learning objects. Learning objects offer efficiency production on the side of content composition and precision the quality of the learning experience. Learning objects add

"just-enough" to the desire for "just-in-time" learning. Organizations can save a tremendous amount of cost and time by re-using content and reducing redundancy introduction of new courseware by reusing the content (by linking or copying content from existing courseware) at different levels of granularity (whole or part of the courseware structure).

Publishing workflow

Content creating, reviewing, publication and assignment to different audiences is a complex process, similar to the review stages of a document. Yet, learning technologies provide for little or no workflow management. A LCMS would also then manage the workflow through which content is reviewed, accepted and released for general access and consumption. These activities include:

Communication between authors and reviews

Ability for authors from remote sites to be able to access content

Notification (update, review status), content expiration

Support for industry standards

Finally, an e-learning product that does not support industry standards such as IMS (Instructional Management System) and ADL's SCORM (Sharable Courseware Object Reference Model) is a poor investment. The ability to support and manage internally and externally (third party) in creating learning content preserves the investment companies. Making learning content. Standards are the best way to achieve this.

Learning content management delivers the promise of e-learning as we become more experienced in e-learning, the key issue is not accessibility the content, but it is how to access to the relevant, focused and directly targeted content. This force drive organization to manage learning content in a scalable, centrally managed environment. Their goals are:

- Rapid content development through content reuse and templates
- Content development by multiple authors (SME, e-learning content developers)
- Workflow process through the life cycle of the content
- Consistent content indexing and search capabilities

Today, value in e-learning is created at least as much through the content as it is through the delivery of content. This has shifted the critical tasks away from logistics management toward content management. A learning content management system fulfills the promise of continuous and dynamic knowledge transfer within the extended enterprise and brings learning closer to the work at hand.

2.1.4 Authoring Tool

The term **authoring tool** [4] is misleading. In fact, when people hear the term for the first time, they often assume it refers to a specialized form of word-processing software for professional writers. In fact, authoring tool go far beyond writing and word processing. E-learning authoring tool enable trainers to integrate an array of media to create professional, engaging and interactive training content. Some tools offer conversion of an existing learning object course to a new one. E-learning course creation tools might be a more accurate term for this category of software, However authoring tool is the term of choice for now.

Custom content is the new frontier of e-learning. Trainers are trying to create and publish custom contents for use on the Internet, intranets, or CD-ROMs. Some trainers seek high-speed deployment for their critical information throughout an organization, while others want control of courseware and independence from programmers. Many organizations are attempting to reduce their training costs by developing e-learning materials in-house. Whatever the reason, more trainers are finding themselves researching the features, benefits, and cost of authoring tools.

2.1.5 The Internet

The Internet [5] is at once a world wide broadcasting capability, a mechanism for information dissemination, and a medium for collaboration and interaction between individuals and their computers without regard for geographic location.

The Internet represents one of the most successful examples of the benefits of sustained investment and commitment to research and development of information infrastructure.

This history revolves around four distinct aspects. There is the technological evolution that began with early research on packet switching and the ARPANET (and related technologies), and where current research continues to expand the horizons of the infrastructure along several dimensions, such as scale, performance, and higher level functionality. There is the operations and management aspect of a global and complex operational infrastructure. There is the social aspect, which resulted in a broad community of *Internauts* working together to create and evolve the technology. And there is the commercialization aspect, resulting in an extremely effective transition of research results into a broadly deployed and available information infrastructure.

The Internet today is a widespread information infrastructure, the initial prototype of what is often called the National (or Global or Galactic) Information Infrastructure. Its history is complex and involves many aspects - technological, organizational, and community. And its influence reaches not only to the technical fields of computer communications but throughout society as we move toward increasing use of online tools to accomplish electronic commerce, information acquisition, and community operations.

The Internet is global computer network. A network based on many protocol such as Internet Protocol (IP), Simple Mail Transfer Protocol (SMTP) and the Domain Name System (DNS). These protocols enable global communications between all connected computing devices. The Internet provides the platform for web services and the World Wide Web.

2.1.6 The World Wide Web [6]

People have dreamt of a universal information database since 1940s. In this database, not only the data could be accessible by people around the world, but it also makes a new easy way to link that information together. This allows user to find the information they need easily.

Only recently has the technology caught up to make such systems possible. The most popular current system is the World Wide Web [5]. The official description defines the WWW as a "wide-area hypermedia information retrieval initiative aiming to give universal access to a large universe of documents." In simpler terms, the Web is an Internet-based computer network that allows users on one computer to access information stored on other via the world-wide network.

The World-Wide Web began in March 1989 at CERN. (CERN was originally named after its founding body the 'Conseil Europeen pour la Recherche Nucleaire,' and is now called 'European Laboratory for Particle Physics.')

CERN is a meeting place for physicists from all over the world. They collaborate on complex physics, engineering and information handling projects. Thus, the need for the WWW system arose from the geographical dispersion of large collaborations, and the fast turnover of fellows, students, and visiting scientists.

CERN possessed both the financial and computing resources necessary to start the project. In the original proposal, Berners-Lee outlined two phases of the project:

First, CERN would make use of existing software and hardware as well as implementing simple browsers for the user's workstations, based on an analysis of the requirements for information access needs by experiments.

Second, they would extend the application area by allowing the users to add new material.

Berners-Lee expected each phase to take three months with the full manpower complement: he was asking for four software engineers and a programmer. The proposal talked about a simple scheme to incorporate several different servers of machine-stored information already available at CERN. This scheme used hypertext to provide a single user-interface to many large classes of stored information such as reports, notes, data-bases, computer documentation and on-line systems help.

As popular as it is at the moment, the WWW is not the only possible implementation of the hypertext concept. In fact, the theory behind the WWW was based on a more general project 'Xanadu', that is being developed by Ted Nelson.

2.1.7 Database Management System (DBMS)

A Database Management System (DBMS) [7] is computer software available from computer vendors. It's used to create, access, control and manage the database. The core of the DBMS is called its **database engine**. The engine responds to specific commands to create database structures and to manipulate information in the database. The database management system is provided by a database technology vendor such as Oracle , IBM , Microsoft or Sybase.

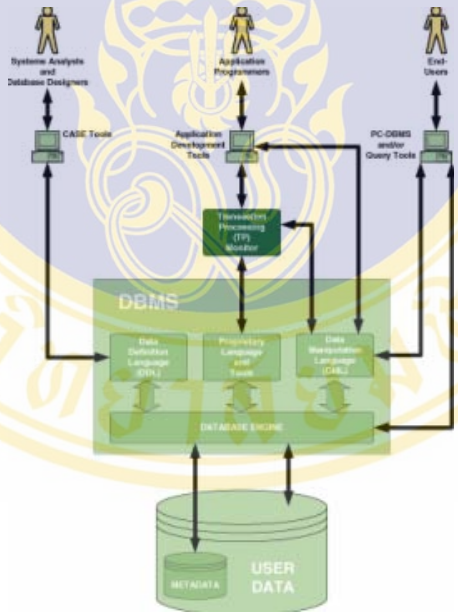


Figure 2.5 Depicts a typical database management system architecture.

A systems analyst or database analyst, designs the structure of the data in terms of data types, fields contained in those record types and relationships that exist between data types. These structures are defined to the database management system using its data definition language.

2.2 Relevant Research

A Tutor Learning Management System: [8] A Tutor Learning Management System is an Open Source Web-based Learning Content Management System (LCMS) designed with accessibility and adaptability in mind. Administrators can install or update A Tutor in minutes. He or she could develop custom templates to change its user interface. Educators can quickly assemble, package, and redistribute Web-based instructional content. Moreover, they would retrieve, import prepackaged content, and conduct courses online. This make students learn in an adaptive learning environment.

The Inclusive Learning Exchange (TILE): [9] The TILE is fully searchable, accessible and personalized learning objects. This environment supports the deliver of web-based media such as hypertext, multimedia presentation, dynamic web-contents and others. Learning content is constructed using a learning design model to maintain the coherency of the learning experience. It also supports the deconstruction, re-purposing of learning content, facilitating the collaborative and cumulative authoring of assembly objects. Both the authoring tool and repository interface present this learning design framework, make it possible for the educators to markup and metatag learning content as a byproduct of structuring a learning plan.

Prush Sa-Nga-Ngam : [10] developed and tested learning ware with Sharable Content Object Reference Model (SCORM) Conformance Test Suite and an E-Learning platform. His test results show that the developed learning ware compatible with SCORM version 1.2. Moreover, the deployment. The produced learning ware is compatible with the selected SCORM 1.2 named Wizlearn. The produces contents were easy to disassemble and re-assemble enable novice educator composes new web-based teaching and learning materials.

CHAPTER III
MATERIALS AND METHODOLOGY

3.1 Research Tools

3.1.1 Development Tools

Hardware

Processor	:	Mobile CPU 1.3 GHz.
RAM	:	256 MB
Hard Disk	:	30 GB
Monitor	:	Monitor 14 inches
Peripherals	:	Keyboard , Mouse , Speaker , Microphone , Digital Camera , Video Recorder

Software

Operating System	:	Microsoft Windows XP Professional
Application Tool	:	Microsoft Visual Basic.Net (VB.Net) Microsoft Active Server Page .Net (ASP.Net) Internet Information Services (IIS)
Database	:	Microsoft Access 2003
Web Browser	:	Internet Explorer 6.0
Case Tools	:	Microsoft Visio 2002
Multimedia Tools	:	Adobe Photoshop 7.0 Windows Media Player Voice Recorder Image Editor
Other	:	Microsoft Word 2003 Microsoft Powerpoint 2003

Acrobat Reader 6.0

3.1.2 Operation Tools

Hardware

Processor	:	CPU 166 MHz. or faster.
RAM	:	256 MB or more
Hard Disk	:	4 GB or more
Monitor	:	Monitor 14 inches or larger
Peripherals	:	Keyboard , Mouse , Speaker , Microphone , Digital Camera , Video Recorder

Software

Operating System	:	Microsoft Windows 98 , ME , 2000 , NT , XP , Linux
Database	:	Microsoft Access 97 , 2000 , XP , 2003
Web Browser	:	Internet Explorer 6.0
Multimedia Tools	:	Adobe Photoshop 6.0 , 7.0 , CS Windows Media player Voice Recorder Image Editor
Other	:	Microsoft Word 97 , 2000 , XP , 2003 Microsoft Powerpoint 97 , 2000 , XP , 2003 Acrobat Reader 6.0

3.2 Research Methodology

3.2.1 Sampling

The participants in the research were instructors, students or interested people in ten educational institutes in which web-based instruction development tool and e-learning website are implemented. This study aimed to involve many educated institutions in different major sector such as Computing, Typing, English, Thai and the other major in different education levels, i.e. primary education, secondary education, high school and university. In this study the convenient sampling method was used.

3.2.2 Data Collection Methods

The general techniques were used for qualitative data collection and analysis. A focus group interviewing, individual interviewing and observation techniques were used for data gathering. Some data were collected by means of semi-structured.

3.2.3 Data Analysis

Data from individual and focus group interviewing were analyzed using Entity Relationship Diagram, Context Diagram and Data Flow Diagram.

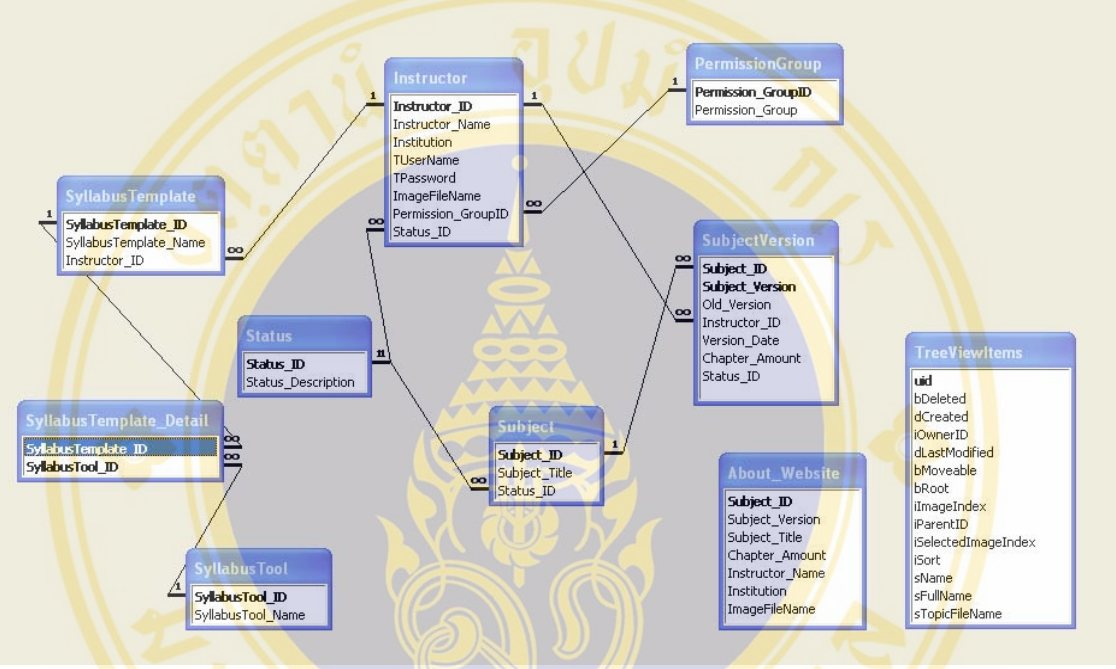
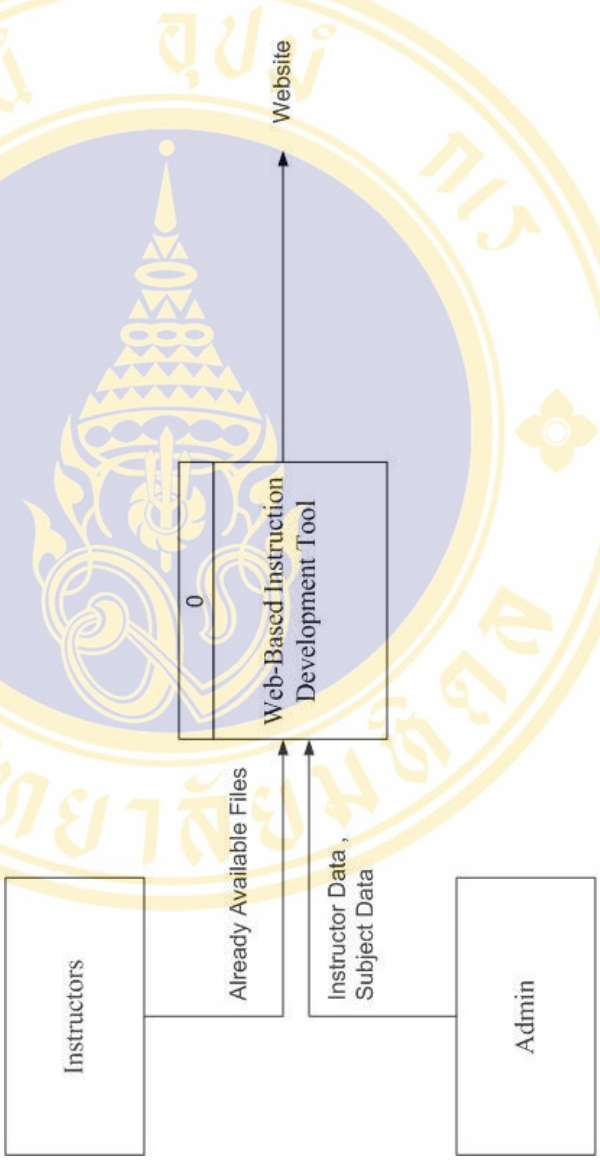
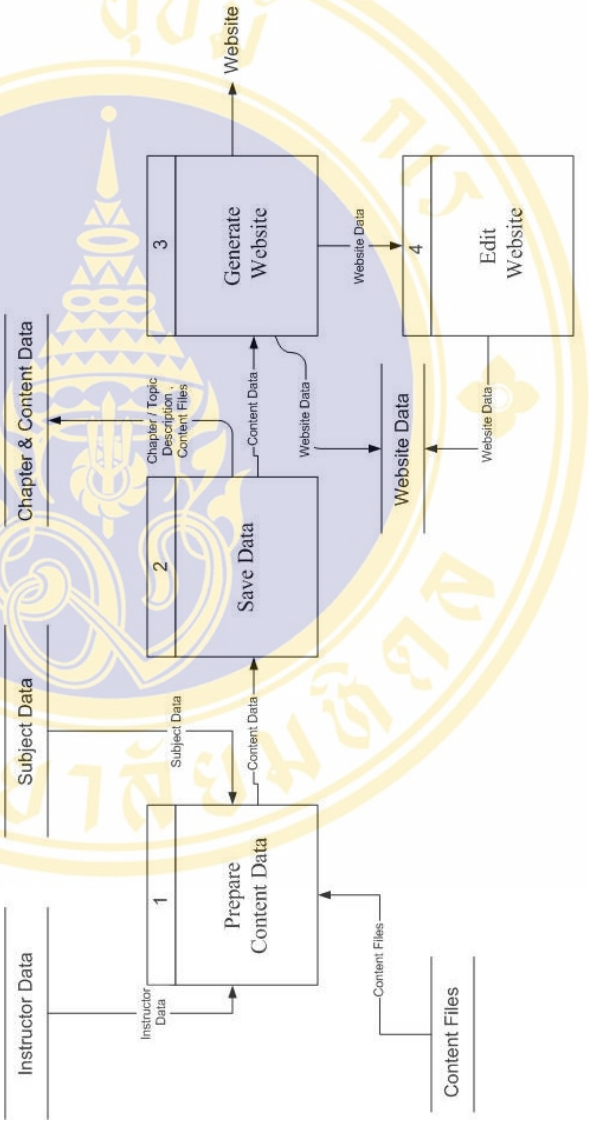


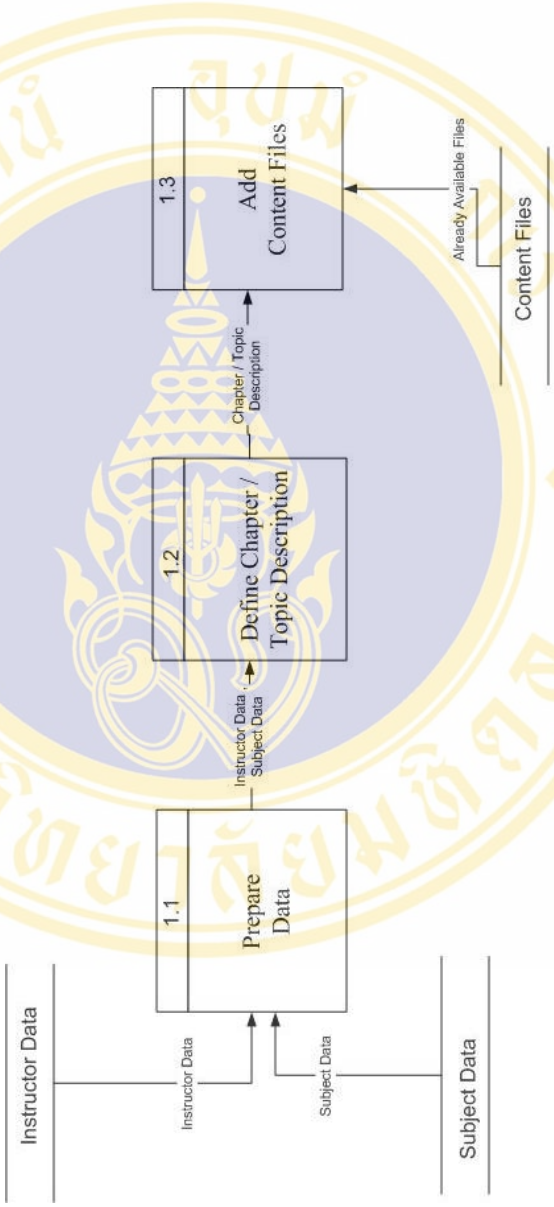
Figure 3.1 Entity Relationship Diagram Of Web-Based Instruction Development Tool Database Name: WIDTS_DB.mdb



Context Diagram



Data Flow Diagram Level 1



Data Flow Diagram Process 1 Level 2

3.2.4 System Design

The system is designed by using Entity Relational Model. This will produce several results such as.

- Menu and screen design, from user requirements.
- Data design will be designed in characteristic of relation model, The Microsoft Access 2003 is used to build database.

3.2.5 System Development

In this step, the data which obtained from analysis and deigns system will be used to develop application software and manipulate database and application system.

- Develop application using Microsoft Visual Basic.Net (VB.Net) , Microsoft Active Server Page .Net (ASP.Net) and Internet Information Services (IIS)
- Create database using Microsoft Access 2003

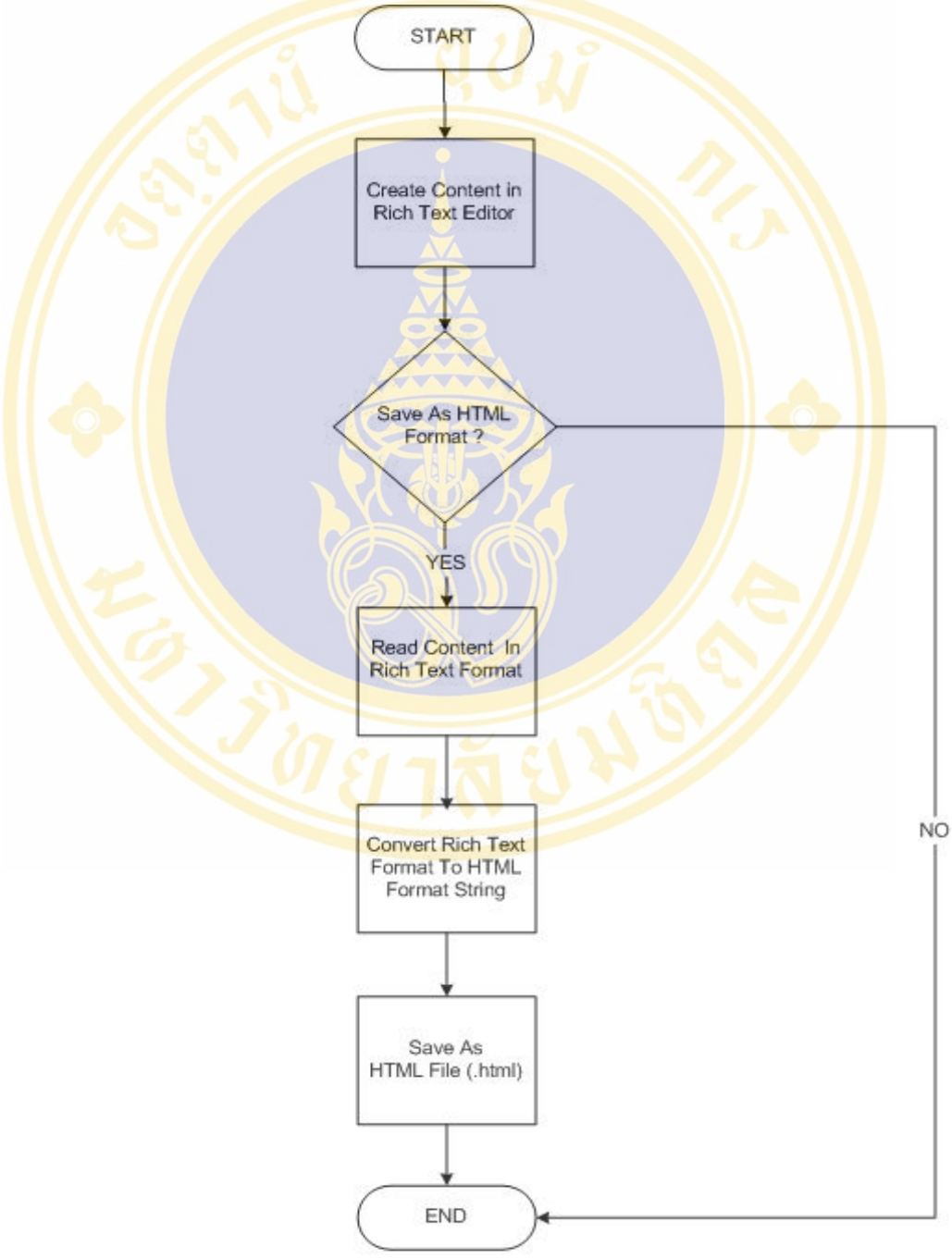
3.2.6 Implementation and Testing

The system will be installed and tested to findout errors. This step will be done before launch the developed software.

- Testing by developer during the system development.
- Testing by instructors who have to prepare real data to use during testing phase.

3.2.6.1 Converting Rich Text Format (.rtf) To HTML Format File Method

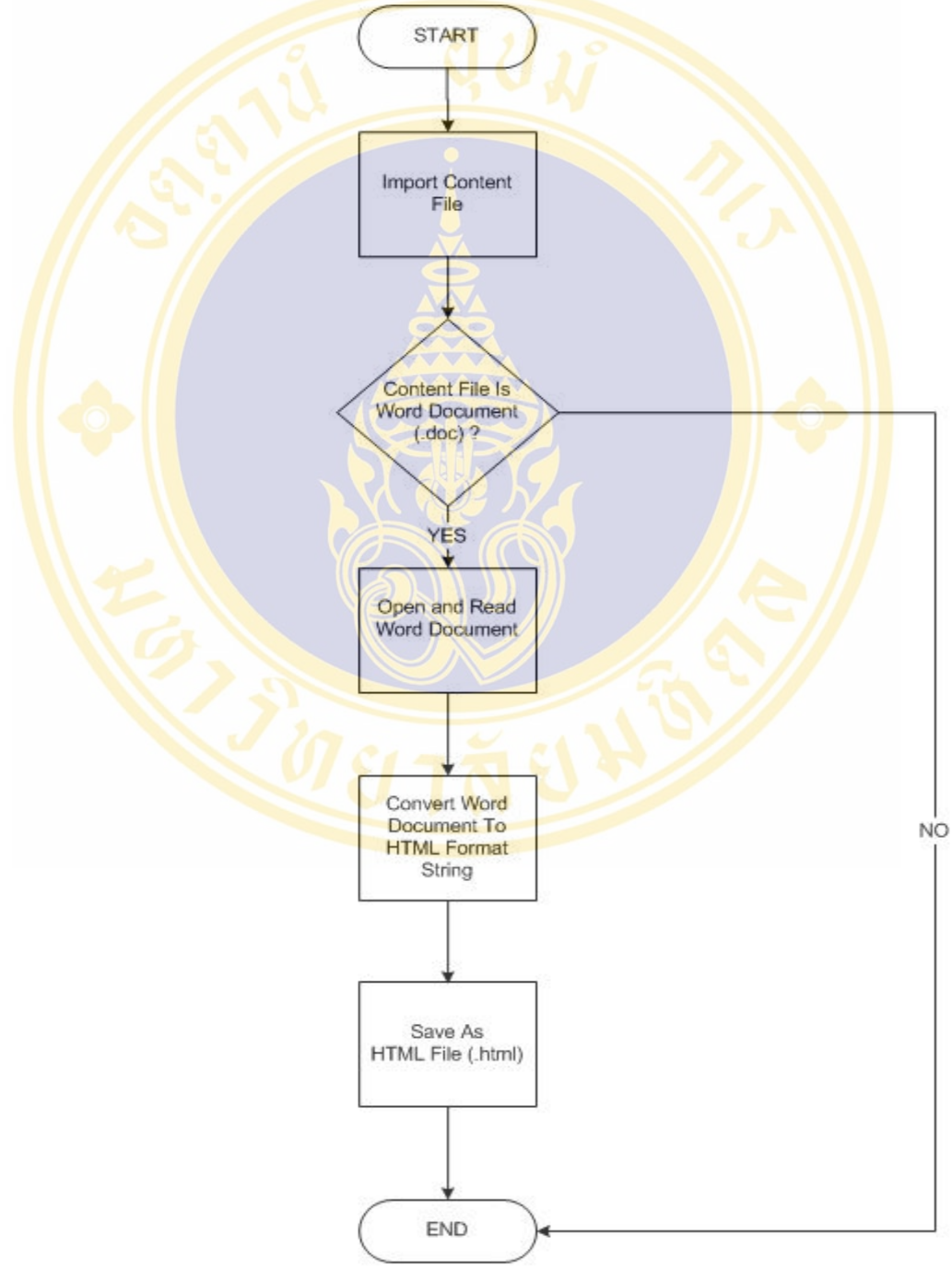
This flowchart shows how to convert rich text format (.rtf) to html format.



Converting Rich Text Format (.rtf) To HTML Format Procedure

3.2.6.2 Converting Word Document (.doc) To HTML Format File Method

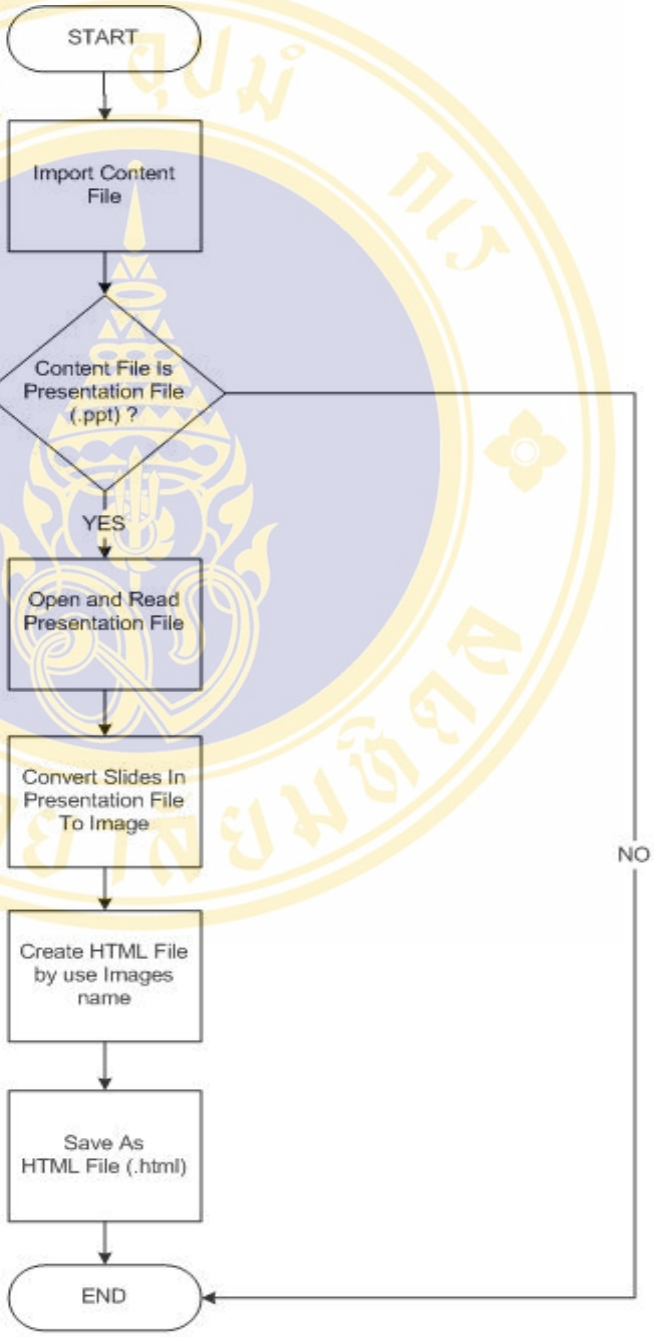
This flowchart shows how to convert word document (.doc) to html format.



Converting Word Document (.doc) To HTML Format Procedure

3.2.6.3 Converting Presentation File (.ppt) To HTML Format File Method

This flowchart shows how to convert presentation file (.ppt) to html format.



Converting Presentation File (.ppt) To HTML Format Procedure

3.2.7 Evaluation and documentation

Evaluation

The instructors have to judge the developed system.

List	Instructor's Opinion									
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
1. Adequacy	4	4	3	4	5	4	3	5	4	5
2. Appropriateness	4	5	4	4	4	5	4	4	5	4
3. Availability	4	3	5	4	5	4	4	3	4	5
4. Correctness	4	5	5	5	4	4	4	3	4	4
5. Easy To Use	5	4	5	5	3	5	5	4	5	4
6. Efficiency	3	4	4	4	4	4	5	5	5	4
7. Flexibility	4	5	5	4	3	4	5	4	4	5
8. Quality	4	5	5	5	5	5	5	5	5	4
9. Speed Of Execution	5	4	5	5	4	4	4	5	4	5
10. Usability	4	5	4	4	5	4	5	5	4	4
Average Point	**41**	**44**	**45**	**44**	**42**	**43**	**44**	**43**	**44**	**44**
Satisfaction Percent	**82**	**88**	**90**	**88**	**84**	**86**	**88**	**86**	**88**	**88**
Remark : 5 = Excellent , 4 = Good , 3 = Fair , 2 = Less , 1 = Improve										

Table 3.1 Evaluation Result Table of Instructors

Documentation

The document will be prepared in order to provide some documents on developed software.

CHAPTER IV
RESULTS

This chapter describes the results of the development of courseware development tool. The proposed system could facilitate instructors who are not familiar with computing technology to create educational website.

Web-Based Instruction Development Tool is divided into two main parts:

- Web-Based Instruction Development Tool

Web-Based instruction development tool is a website development tool, proposed for users who're not familiar with creating a website using the traditional tools. The involved users are categorized into two groups; administrator and instructors.

- Generatung Website

  This part is the generating website which was intended for learners who can use

internet outside class to learn and download content files. This part is unlimited to any user groups. Since the education is important and necessary for everyone, students and those who are interested can learn from website which has been generated by this tool.

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4.1 Web-Based Instruction Development Tool: Windows Forms

4.1.1 Login

Users are divided into two groups; the instructors and administrator. They must provide their username and password before they can access the system.

Figure 4.1.1 Login menu screen

4.1.2 Subject Data

The instructors use this menu to add or delete subjects and subject descriptions of curriculum.

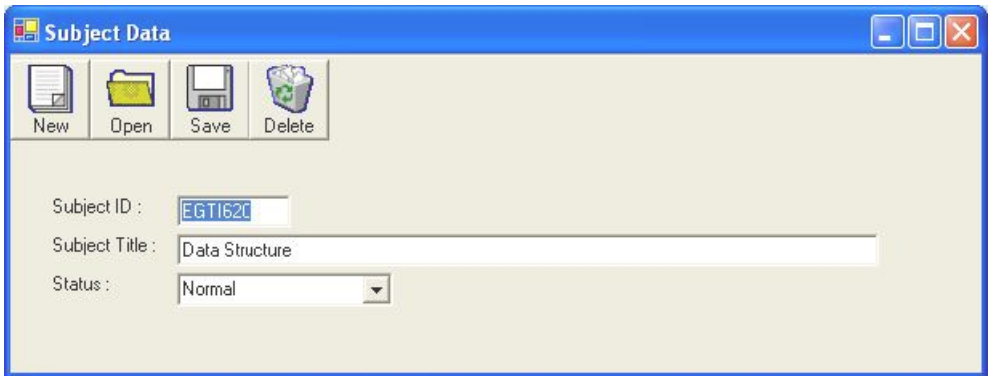


Figure 4.1.2 Subject Data screen

4.1.3 Instructor Data

The administrator uses this menu to manipulate instructor's information. The verified instructor might edit their own information as they need. The system provides the capability to manipulate following data; name, institution, photo and etc.

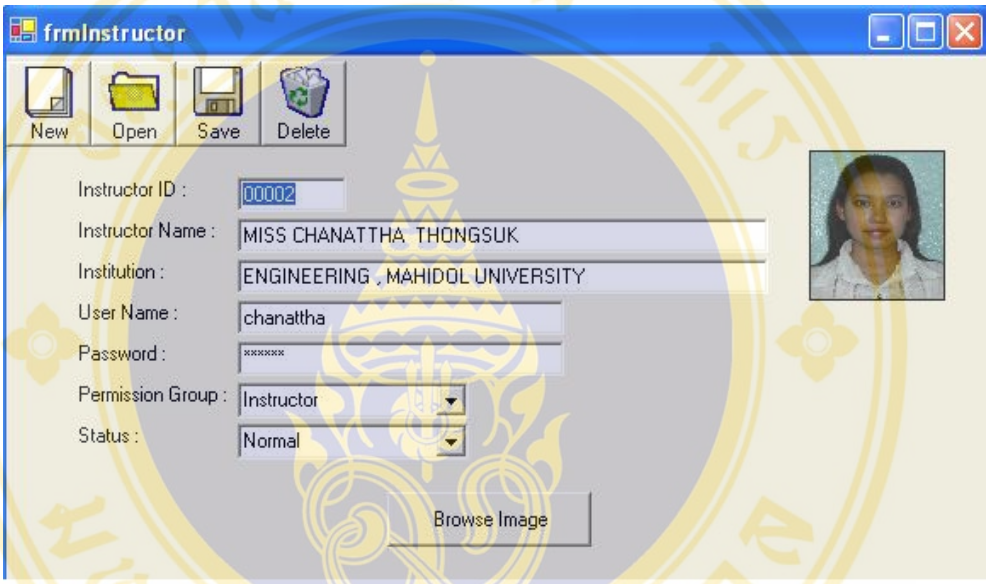


Figure 4.1.3 Instructor Data screen

4.1.4 Web-Based Instruction Development Tools

Figure 4.1.4 depicts the developed software for instruction development tool. The New functions of the system are described as following.

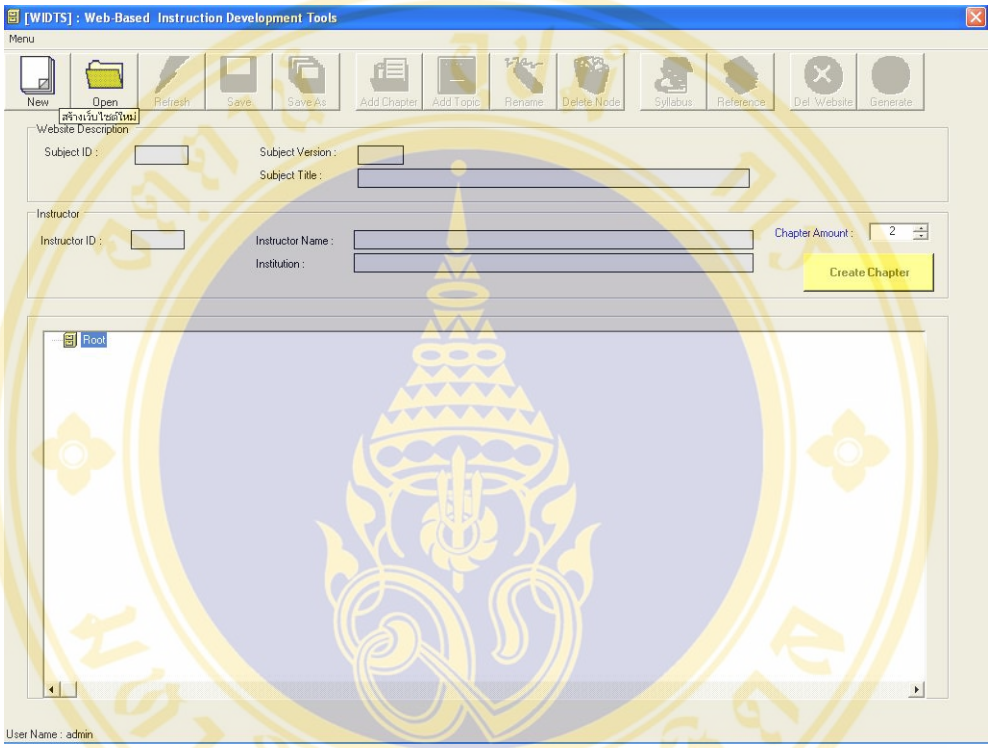


Figure 4.1.4 Web-Based Instruction Development Tool screen

4.1.4.1 The New button

The “New” button is designed to choose subjects, username to provide the subject data in the dialog box. If the user selects the existing website, its version is automatically increased. User also provides chapter’s information and dedicated instructor.

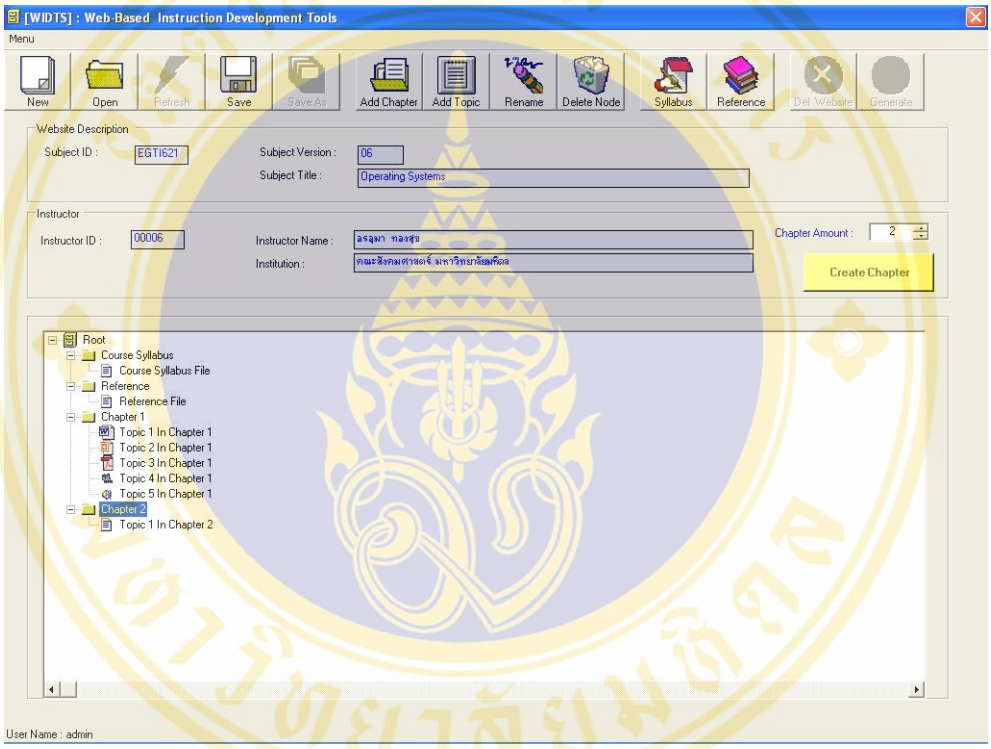


Figure 4.1.4.1 create new website screen

4.1.4.2 The Open button

The “Open” button is used to open existing website. The user must choose subject and version of website then click “Refresh” button.

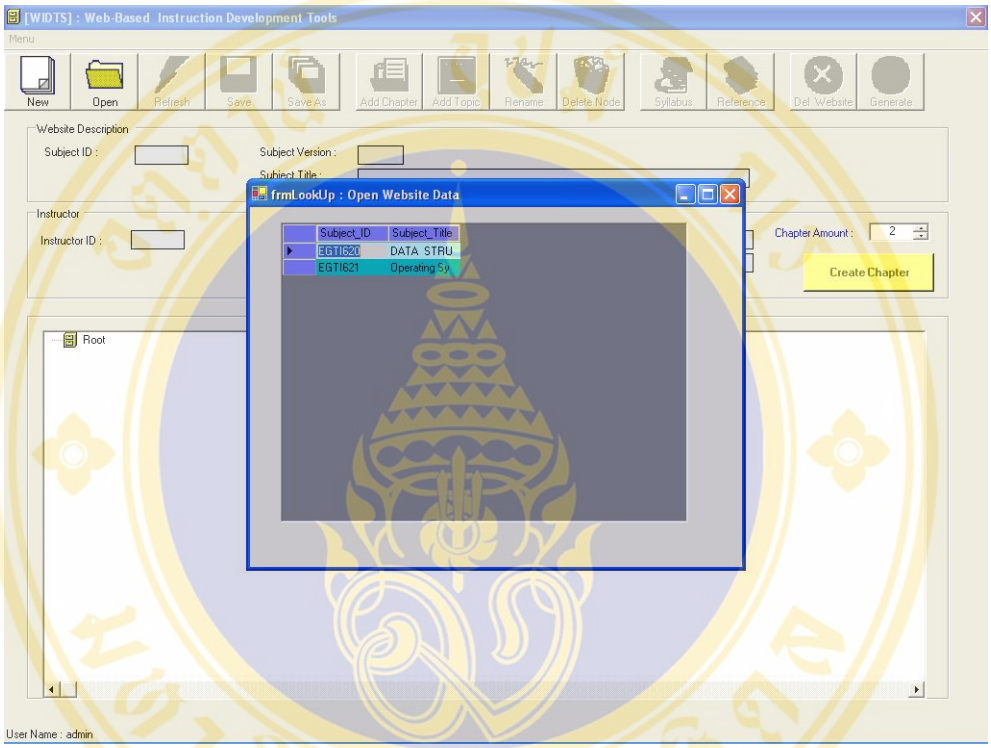


Figure 4.1.4.2.1 Select subject to open website data

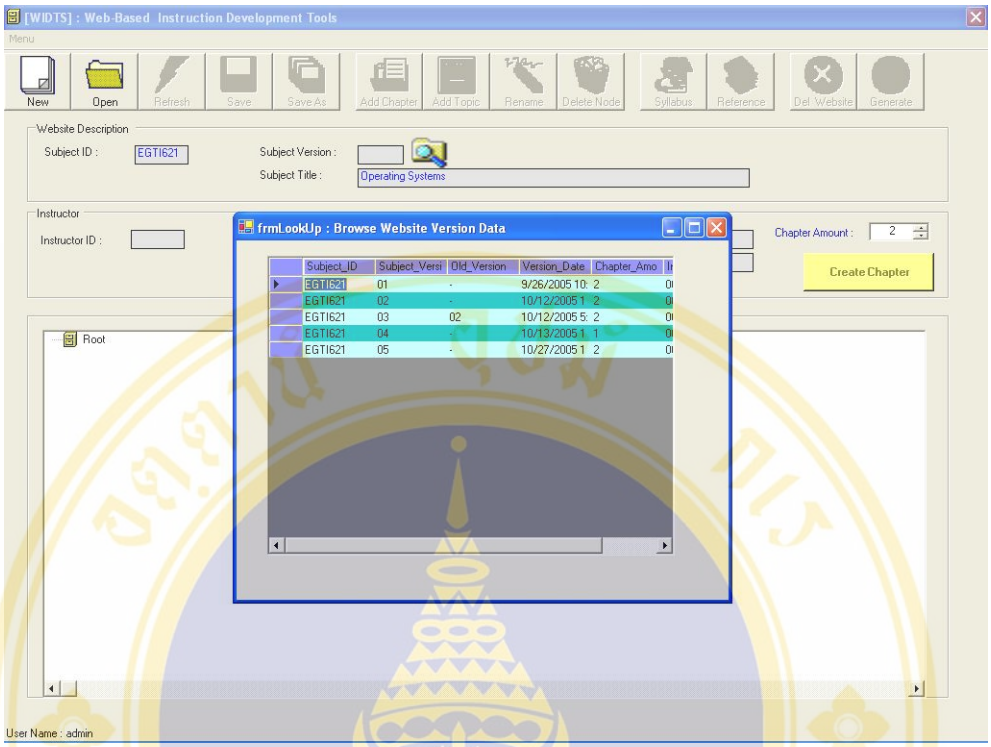


Figure 4.1.4.2.2 Select version to open website data

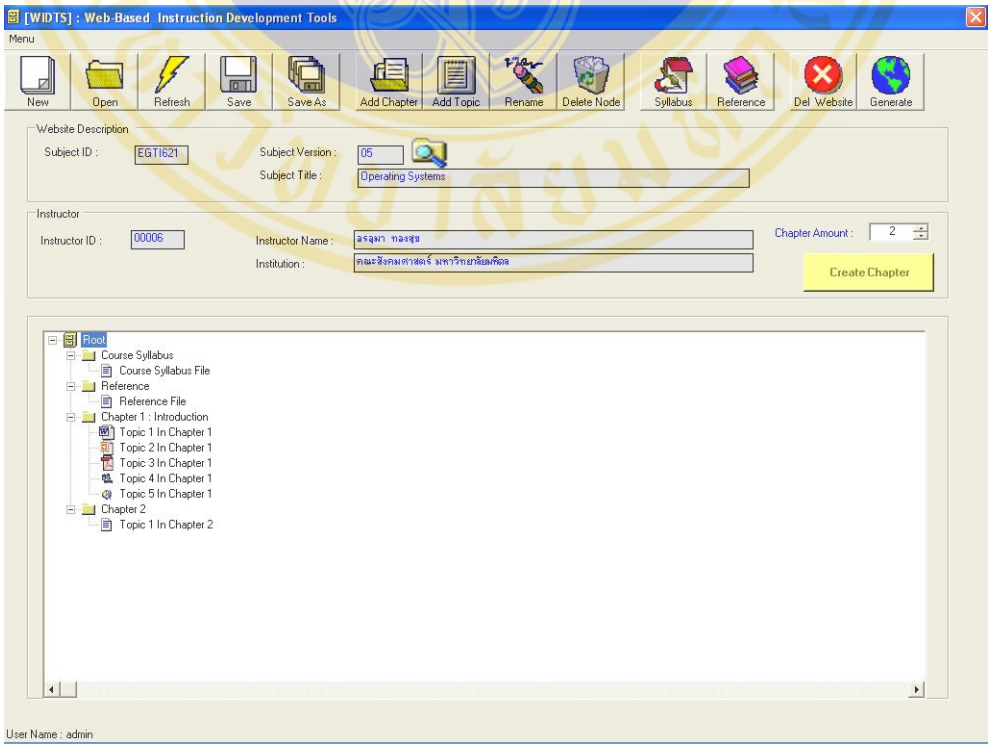


Figure 4.1.4.2.3 Display website data

4.1.4.3 The Refresh button

Click the “Refresh” button to show data in database when open website data.

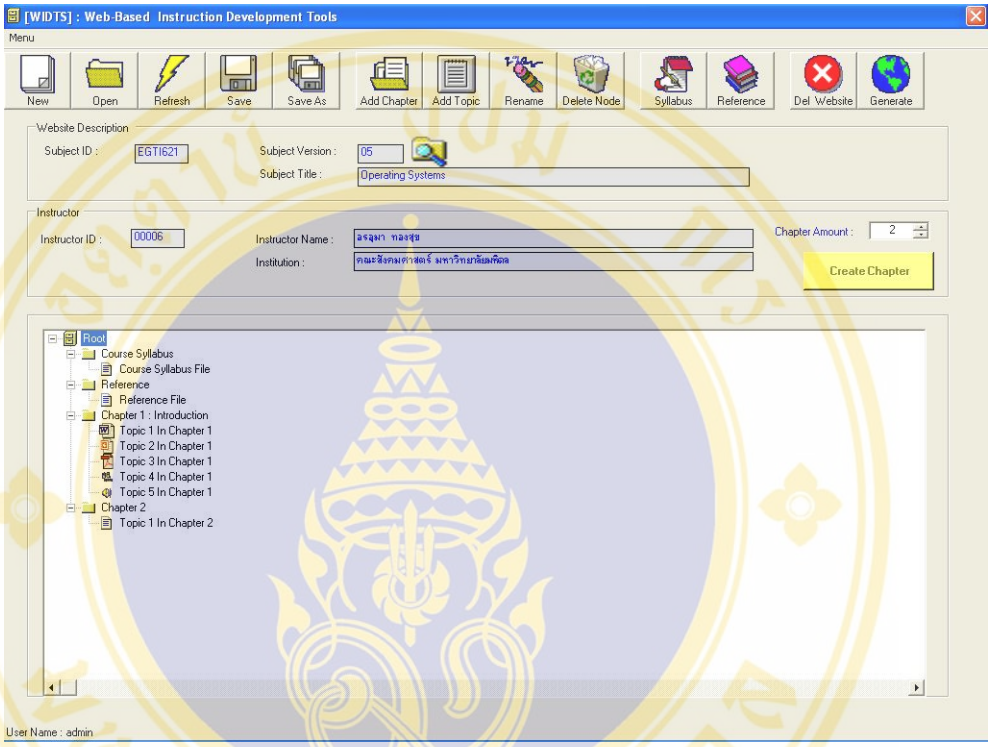


Figure 4.1.4.3 Refresh Website Data screen

4.1.4.4 The Save button

Click the “Save” button to save data and generate website altogether.

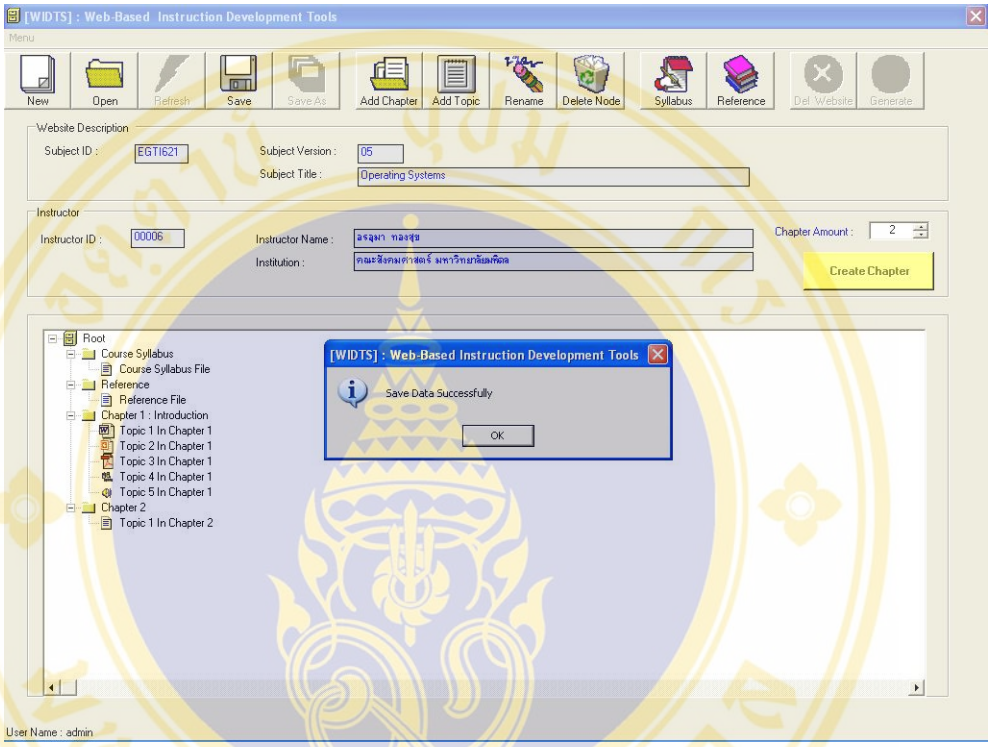


Figure 4.1.4.4 Save website data screen

4.1.4.5 The Save As button

Click the “Save As” button to update data changing. The latest version is saved together with the previous version.

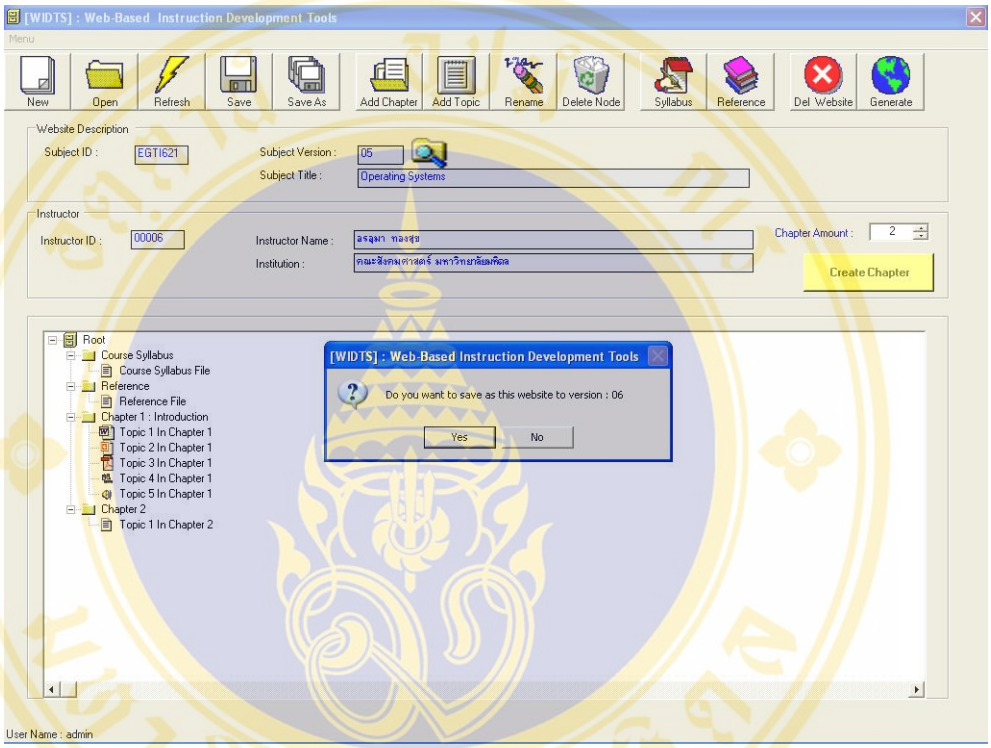


Figure 4.1.4.5 Save As new version screen

4.1.4.6 The Add Chapter button

Click the “Add Chapter” button to append a chapter by clicking at Root Node, then click Add Chapter button.

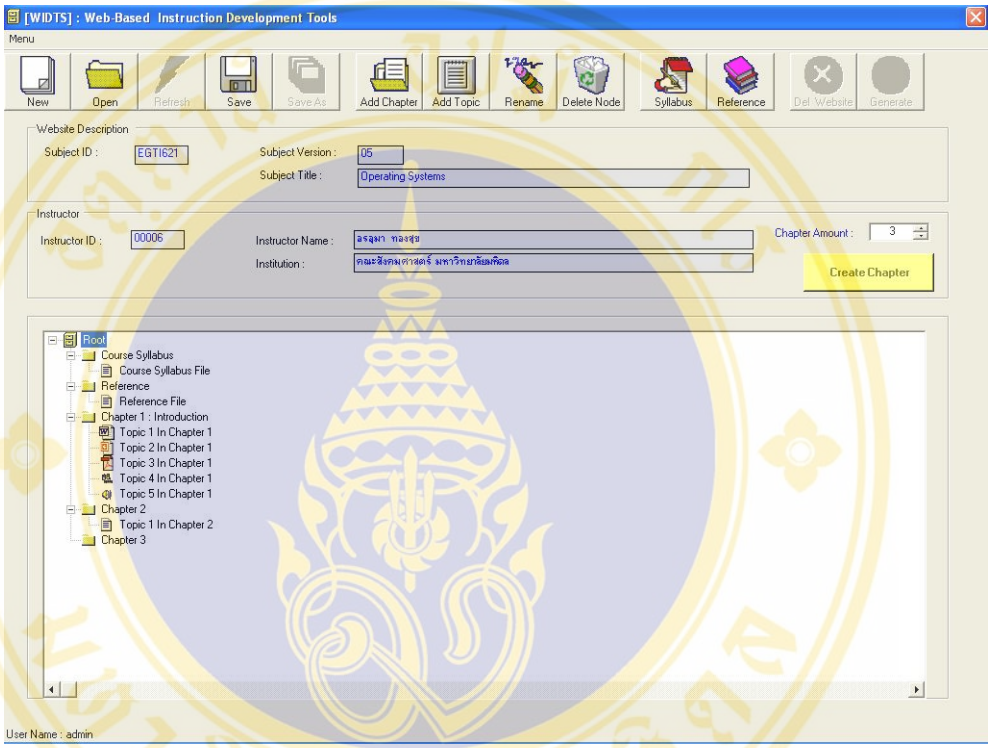


Figure 4.1.4.6 Add Chapter Node screen

4.1.4.7 The Add Topic button

Click the “Add Topic” button to insert topic description using available content files or creating a new content file such as Microsoft Word, Microsoft PowerPoint, Portable Document Format, Rich Text Format and Hyper Text Markup Language.

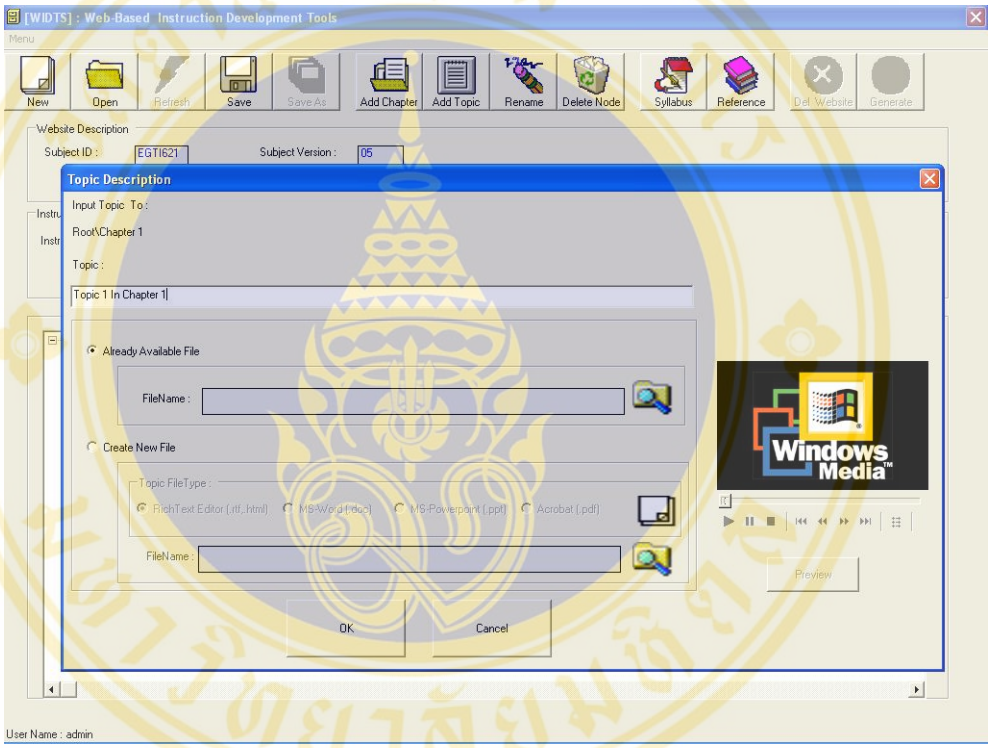


Figure 4.1.4.7 Add Topic Node screen

4.1.4.8 The Rename button

You may change the topic's name by clicking at the topic node, then click the "Rename" button. You may also change the chapter's name by clicking the chapter node and click the "Rename" button.

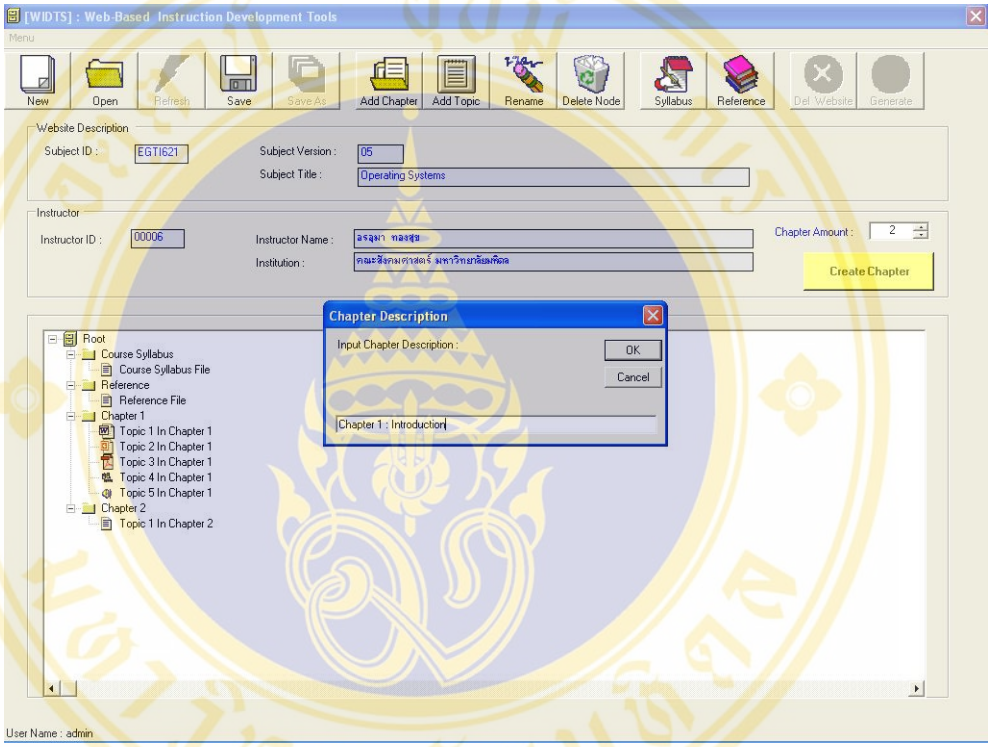


Figure 4.1.4.8 Rename screen

4.1.4.9 The Delete Node button

Click the “Delete Node” button to delete unused node. The confirmation message box will be prompted.

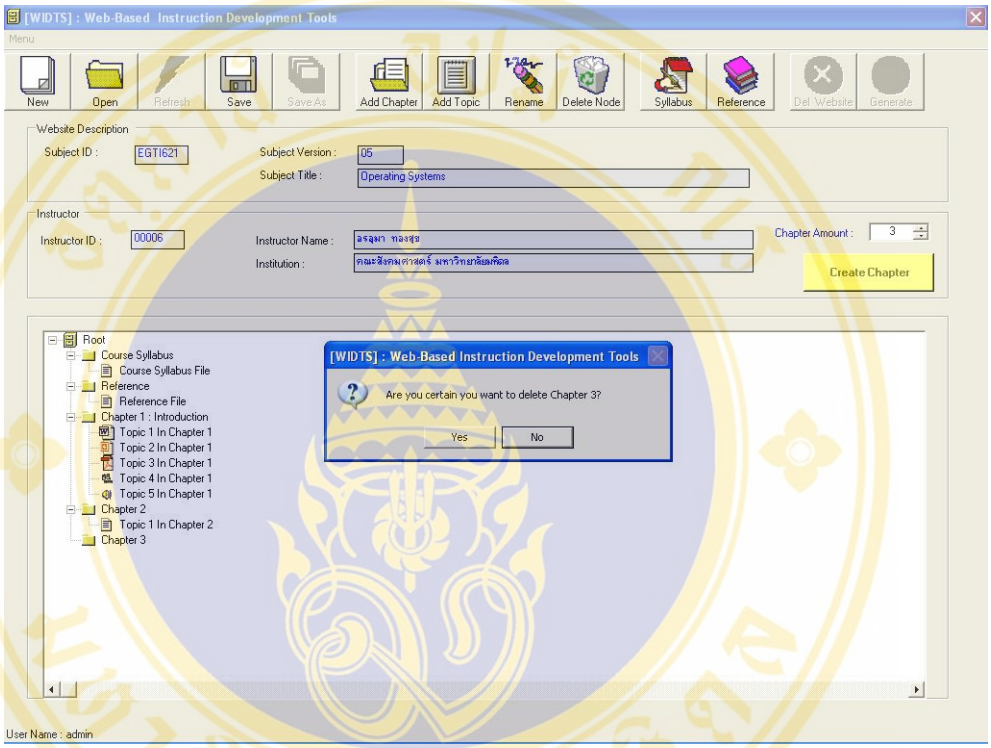


Figure 4.1.4.9 Delete Node screen

4.1.4.10 The Syllabus button

Click the “Syllabus” button to create course syllabus file which is generated by course syllabus template.

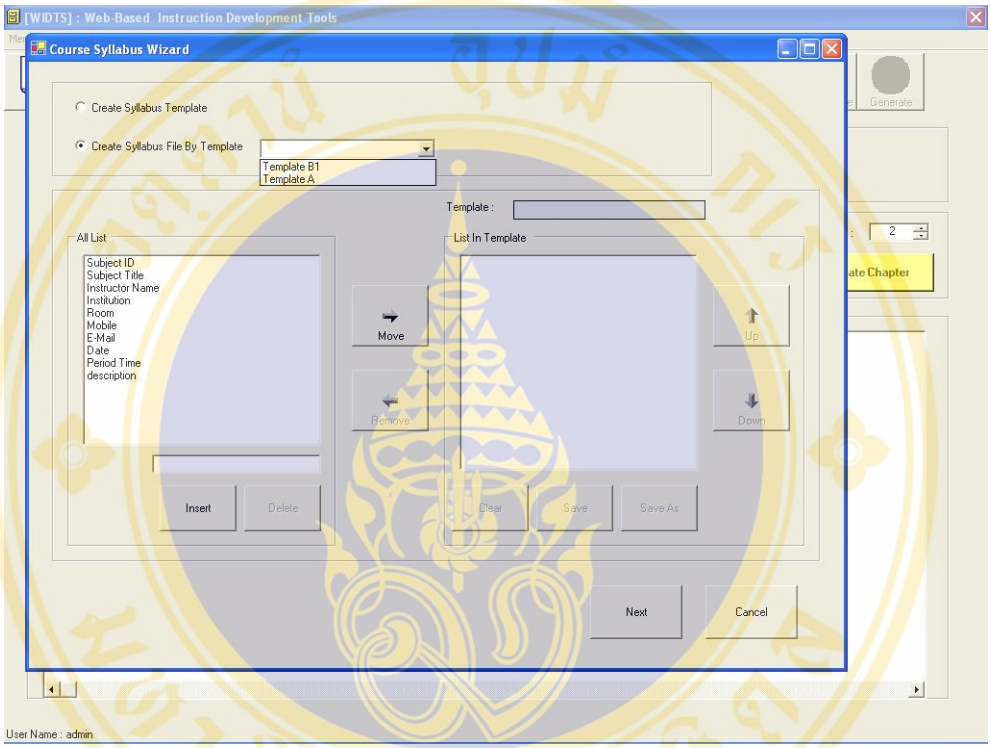


Figure 4.1.4.10 Course Syllabus Template screen

4.1.4.11 The Reference button

Click the “Reference” button to create syllabus file by the provided wizard.

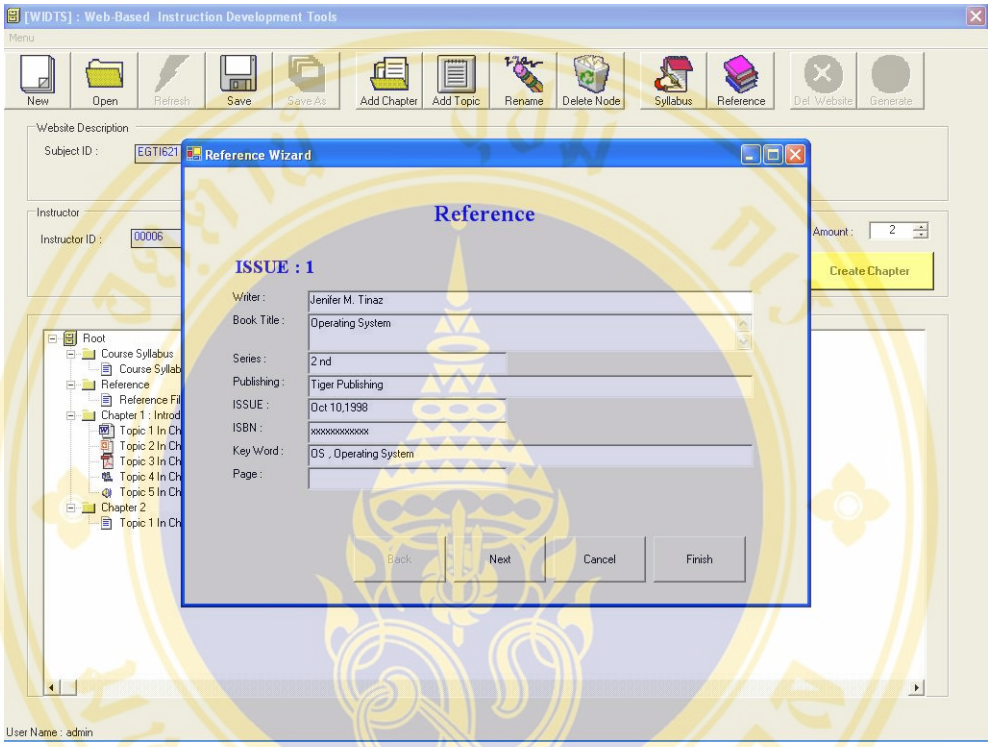


Figure 4.1.4.11 Reference wizard screen

4.1.4.12 The Delete Website button

Click the “Del Website” button to delete website. If user wants to recover data, he or she has to ask administrator to change status.

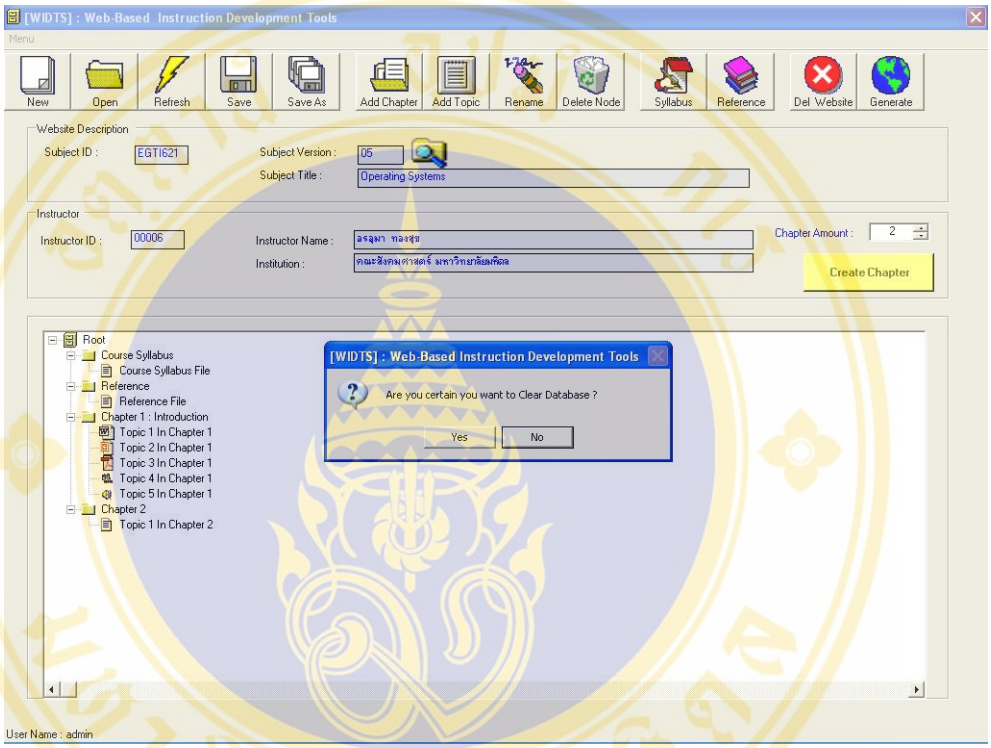


Figure 4.1.4.12 Delete Website Data screen

4.1.4.13 The Generate button

Click “Generate” button when you have saved website data completely. The system will process the function for creating website.

4.2 Website : Web Form

The result of Web-Based Instruction Development Tool is shown in figure 4.2

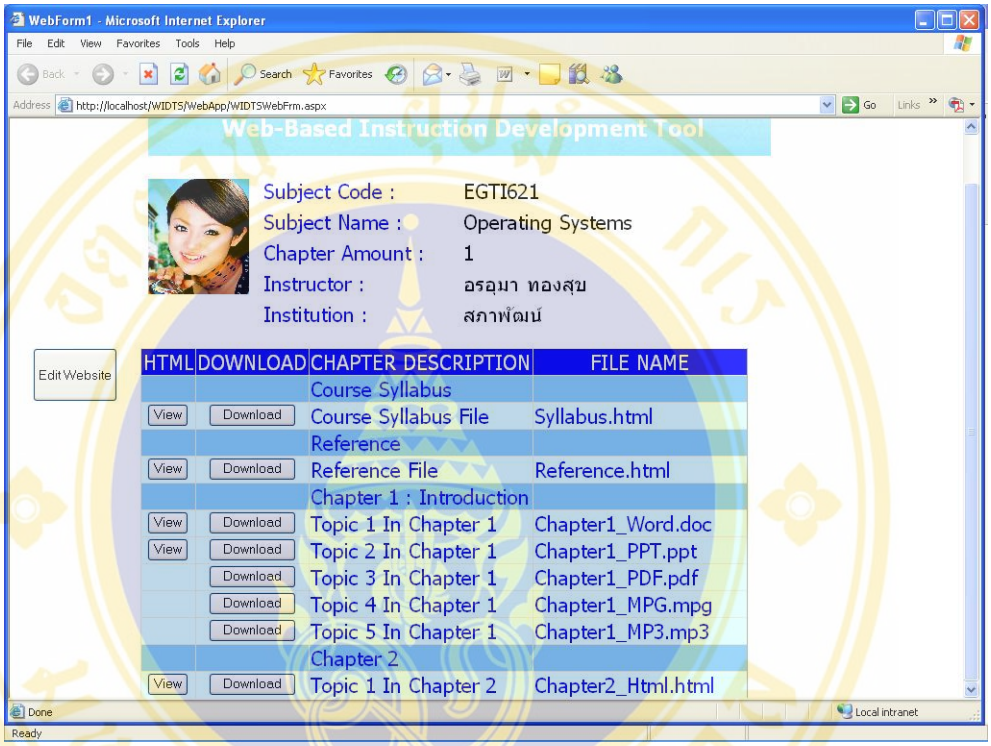
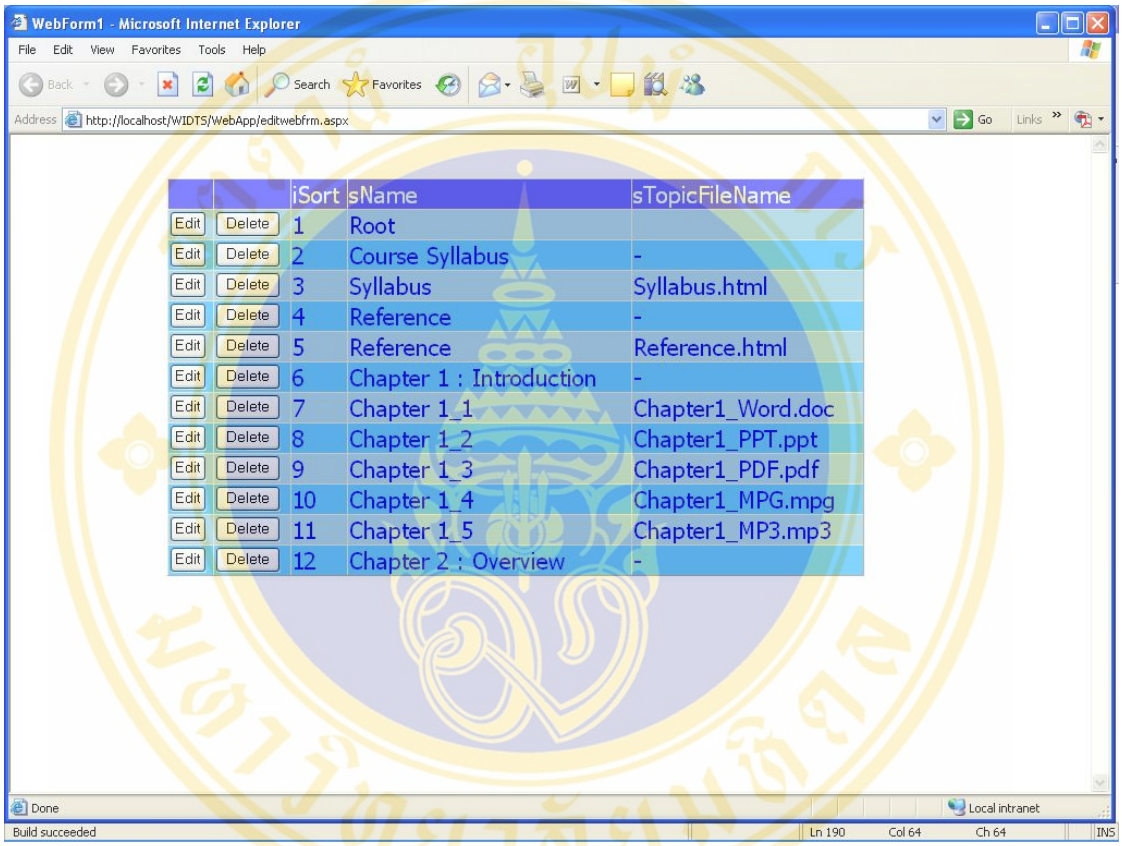


Figure 4.2 Website screen

4.2.1 The Edit Website button

Click the “Edit Website” button to edit or delete chapter / topic description in website.



		iSort	sName	sTopicFileName
Edit	Delete	1	Root	
Edit	Delete	2	Course Syllabus	-
Edit	Delete	3	Syllabus	Syllabus.html
Edit	Delete	4	Reference	-
Edit	Delete	5	Reference	Reference.html
Edit	Delete	6	Chapter 1 : Introduction	-
Edit	Delete	7	Chapter 1_1	Chapter1_Word.doc
Edit	Delete	8	Chapter 1_2	Chapter1_PPT.ppt
Edit	Delete	9	Chapter 1_3	Chapter1_PDF.pdf
Edit	Delete	10	Chapter 1_4	Chapter1_MPG.mpg
Edit	Delete	11	Chapter 1_5	Chapter1_MP3.mp3
Edit	Delete	12	Chapter 2 : Overview	-

Figure 4.2.1 Edit Website screen

CHAPTER V
DISCUSSION

The main objective of this research has been met. I have created a web-content generator as proposed. The developed tool enables novice instructors to create learning website either by using the existing files or creating them from scratch. This tool supports Microsoft Word, Microsoft PowerPoint, Portable Document Format, Rich Text Format and the Hypertext Markup Language. It's proved that the developed tool could help the instructor who is unfamiliar with computing technology to create educational website easier than ever.

The built system could be used to convert Microsoft Word and Microsoft PowerPoint document into the Hypertext Markup Language files: this will enables users to view the contents using ordinary web browser.

Next, solutions, problems, advantages and limitation found during research will be presented as following.

5.1 The Solutions

Microsoft Visual Basic .Net (VB.Net) and Microsoft Active Server Page .Net (ASP.Net) were selected as the implementation tools because they provided appropriate functionalities. User interface was easily developed using these tools. Moreover, the trend in software development with these technologies seems to increase.

In the backend, Microsoft Access was selected to store data because amount of data used in this system was not much and most personal computers have been installed Microsoft Office already. This the development process less complication than installing other database management systems.

5.2 The Problems

- During development, it was found that two major functions (i.e., converting word document and presentation file into html file.) are quite difficult to be implemented.
- Converting word document with images into HTML is problematic (The converted files could not display its content correctly).
- Converting presentation file into direct HTML is problematic (The converted files could not display its content correctly). The developer approached this problem by converting them to be images.

5.3 The Advantages

- Novice instructors could use this tool to create website easily.
- Instructors can either import content files or create new content file into the system immediately.
- Instructors can Save As new version for updating website. The previous website will not be changed and it can be recovery anytime.

5.4 The Limitations

- The system supports only five different file type's creation. Those file types are Microsoft Word (.doc), Microsoft PowerPoint (.ppt), Portable Document Format (.pdf), Rich Text Format (.rtf) and HTML file (.html).
- User can not insert images into the Rich Text Format files.
- Images in Microsoft Word will be lost after converted to html file.
- In presentation file conversion, the presentation file is converted to image file. The proposed system deals with this convert method by convert the text content to the html. At first then convert the set of picture into image files. This approach might lead to the problem of insufficient storage.

- Instructors can not delete the real data. The system will change status of data from Normal to Deleted only. Administrator can really delete the data or recover status of data from Deleted to Normal.

CHAPTER VI
CONCLUSION AND RECOMMENDATION

This chapter describes the conclusion and recommendation.

6.1 Conclusion

The Software Development Life Cycle (SDLC) is used as a research methodology. Microsoft Visual Basic .Net (VB.Net), Microsoft Active Server Page .Net (ASP.Net) and Microsoft Access 2003 were used for database management.

This research has two major functions as following.

1. Web-Based Instruction Development Tool: Windows Form

This system is a Builder System which contains system tool for assisting instructors to create website either by using already available content files or creating new files. Supported files are Microsoft Word (.doc), Microsoft PowerPoint (.ppt), Portable Document Format (.pdf), Rich Text Format (.rtf) and HTML (.html).

The system provides rich text editor to create rich text format and html file. It can convert word document (.doc) and presentation file (.ppt) into html format file (.html) to display on website.

2. Brower System: Web Form

This system allows users to view website created by Web Based Instruction Development Tool using any web browser.

6.2 Recommendation

This application has some issues to improve its performance as following:

- The system should be developed to support more file types and support voice recording.
- The system should support HTML file from the rich text editor with images.
- The system should support converting word document file with images into html format.
- The system should have more efficient converting method (i.e., uses less amount of storage).

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APPENDIX

APPENDIX A

DATA DICTIONARY

Database Name : WIDTS_DB.mdb

Table Name: Subject

Field	Data Type	Length	Description	Key
Subject_ID	Text	7	Subject Code	PK
Subject_Title	Text	100	Subject Name / Title	
Status_ID	Text	1	Data Status	FK

Table Name: SubjectVersion

Field	Data Type	Length	Description	Key
Subject_ID	Text	7	Subject Code	PK
Subject_Version	Text	2	Subject Version	PK
Instructor_ID	Text	5	Instructor Code	FK
Version_Date	Date/Time		Create Date	
Chapter_Amount	Number	Byte	Amount Of Chapter	
Status_ID	Text	1	Data Status	FK

Table Name: Instructor

Field	Data Type	Length	Description	Key
Instructor_ID	Text	5	Instructor Code	PK
Instructor_Name	Text	100	Instructor Name & Surname	
Institution	Text	100	Institution Of Instructor	
TUserName	Text	50	UserName For Login System	
TPassword	Text	50	Password For Login System	
Permisstion_GroupID	Text	1	Permission Group Code	FK
Status_ID	Text	1	Data Status	FK
ImageFileName	Text	50	Image filename of instructor	

Table Name: PermissionGroup

Field	Data Type	Length	Description	Key
Permission_GroupID	Text	1	Permission Group Code	PK
Permission_Group	Text	50	Permission Group Description	

Table Name: Status

Field	Data Type	Length	Description	Key
Status_ID	Text	1	Status Code	PK
Status_Description	Text	50	Status Description	

Table Name: TreeViewItems_[Subject & Version]

Field	Data Type	Length	Description	Key
uid	Number	Long	Auto Number	PK
bDeleted	Yes/No	50	Represent Records As Deleted. But Not Removed From The Database	
dCreated	Date/Time		Date Of Record Was Created.	
iOwnerID	Number	Long	Owner Code	
dLastMidified	Date/Time		Date Of Last Modified	
bMoveable	Yes/No		Represent Records As Moved	
bRoot	Yes/No		Indicates If This Node Is A Root.	
iImageIndex	Number	Long	Symbol Code Of Node	
iParentID	Number	Long	Parent’s Node	
iSelectedImageIndex	Number	Long	Symbol Code Of Node	
iSort	Number	Long	Sorting	
sName	Text	100	Node Description	
sFullName	Text	255	Path And Node Description	
sTopicFileName	Text	255	File Name Of Content File	

Table Name: About_Website

Field	Data Type	Length	Description	Key
Subject_ID	Text	7	Website code	PK
Subject _Version	Text	2	Website version code	PK
Subject _Title	Text	100	Website title	
Chapter_Amount	Number	Byte	Amount of chapter in website	
Instructor_Name	Text	100	Instructor name	
Institution	Text	100	Institution of instructor	
ImageFileName	Text	50	Image filename of instructor	

Table Name: SyllabusTool

Field	Data Type	Length	Description	Key
SyllabusTool_ID	Number		Tool Code	PK
SyllabusTool_Name	Text	50	Name of Tools	

Table Name: SyllabusTemplate

Field	Data Type	Length	Description	Key
SyllabusTemplate_ID	Number		Template Code	PK
SyllabusTemplate_Name	Text	50	Name of Tools	
Instructor_ID	Text	5	Instructor Code	FK

Table Name: SyllabusTemplate_Detail

Field	Data Type	Length	Description	Key
SyllabusTemplate_ID	Number		Template Code	PK
SyllabusTool_ID	Number		Tool Code	PK

APPENDIX B
SYSTEM EVALUATION

Questionnaire Form

Questionnaire For Evaluation System Of Web-Based Instruction Development Tools [WIDTS]					
Name & Surname :					
Gender : **Age :**					
School / College / University :					
Major : **Experience :**					
List Of Assessment	**Level Of Attitude**				
	5	**4**	**3**	**2**	**1**
1. Adequacy					
2. Appropriateness					
3. Availability					
4. Correctness					
5. Easy To Use					
6. Efficiency					
7. Flexibility					
8. Quality					
9. Speed Of Execution					
10. Usability					

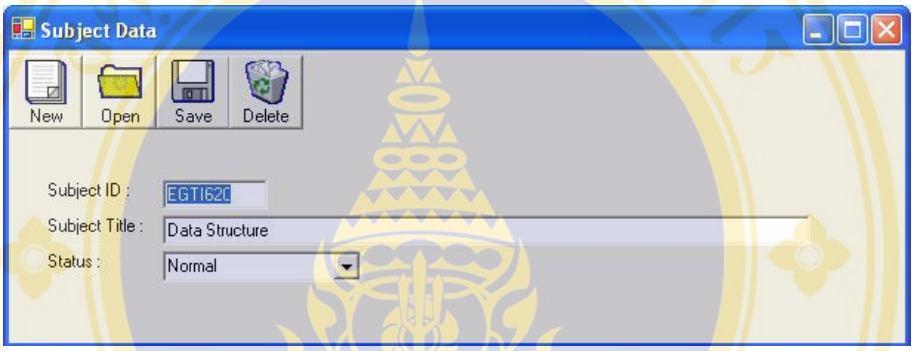
Remark: 5 = Excellent, 4 = Good, 3 = Fair, 2 = Less, 1 = Improve

APPENDIX C
USER MANUAL (ENGLISH VERSION)

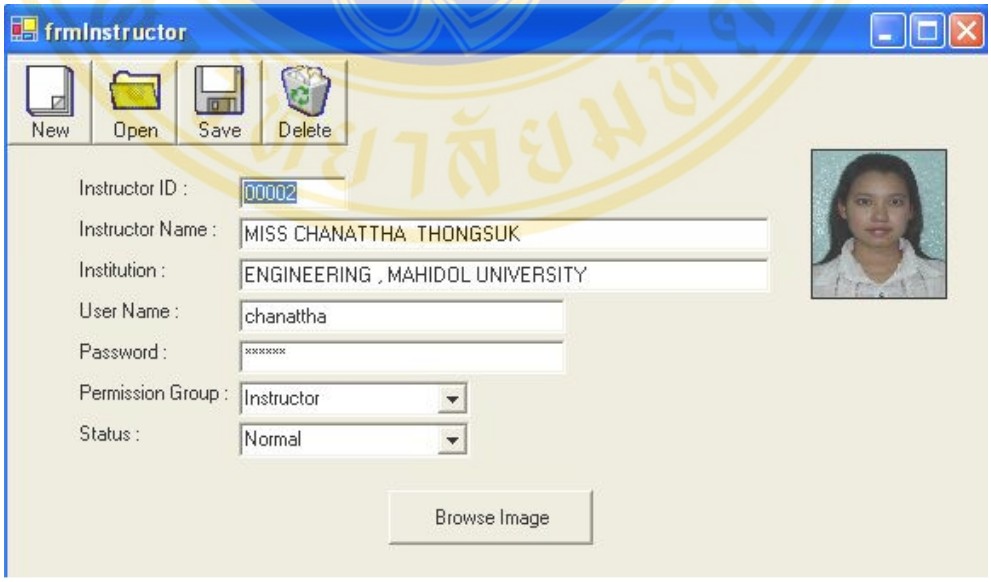
1. Prepare Data

The administrator prepares data using following dialogs.

- Subject Data

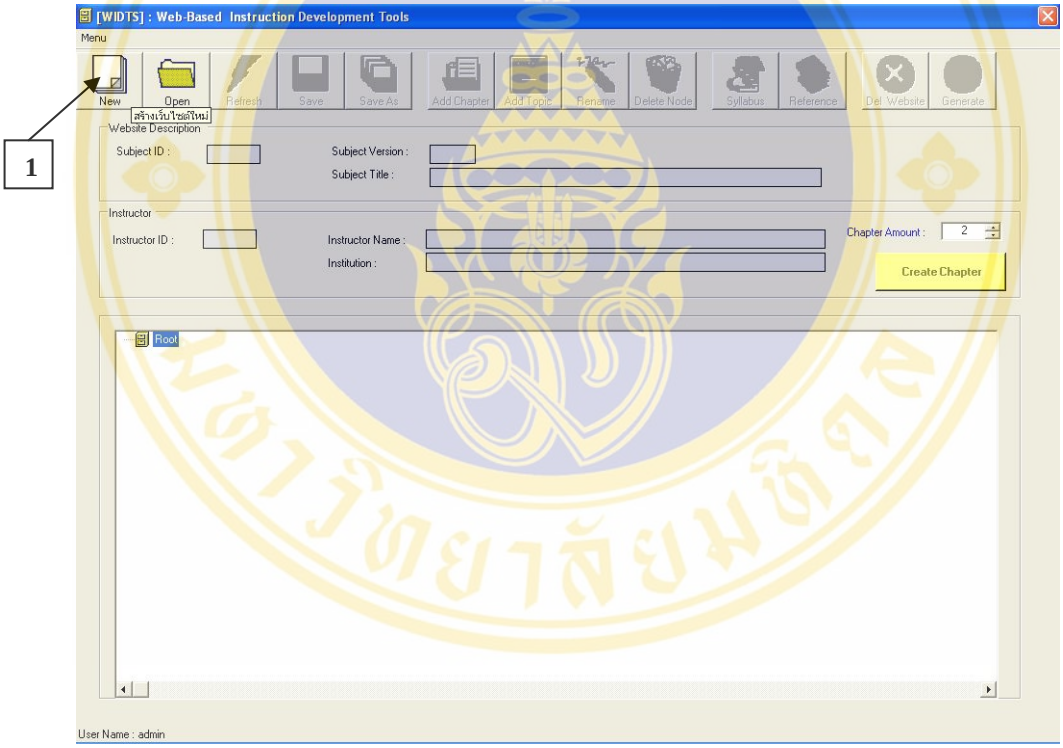


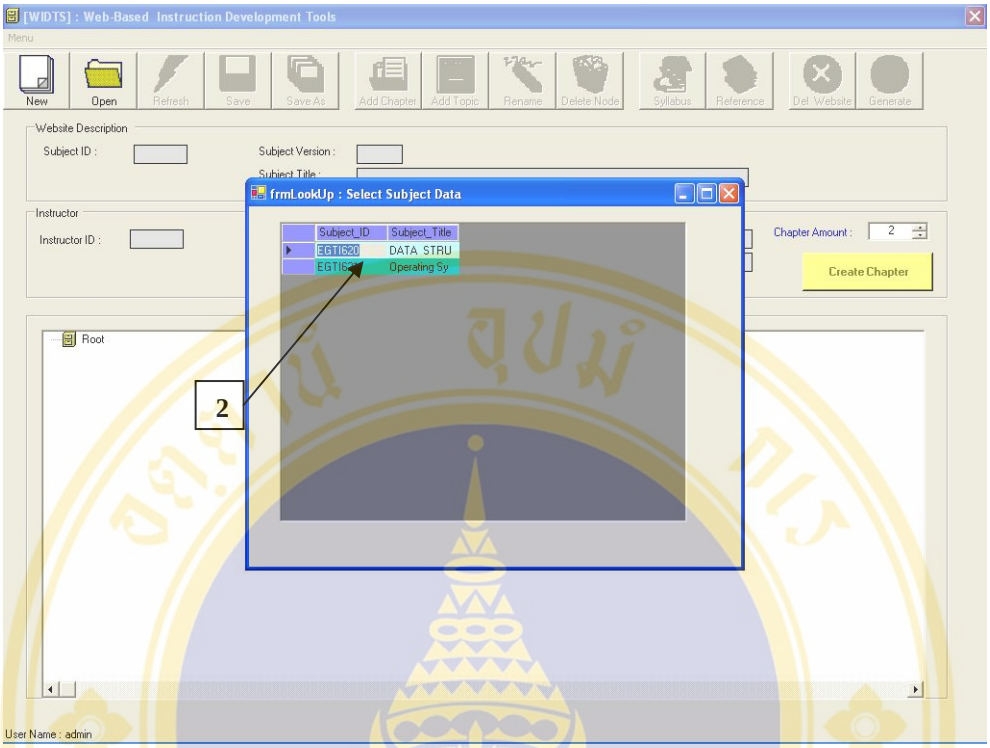
- Instructor Data

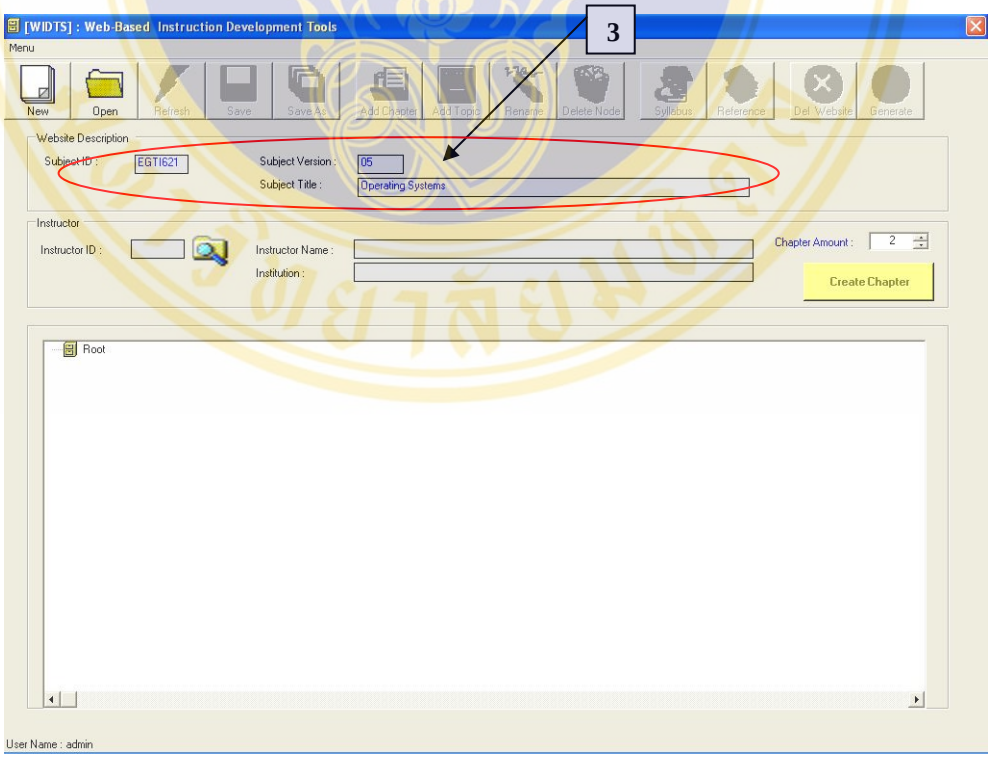


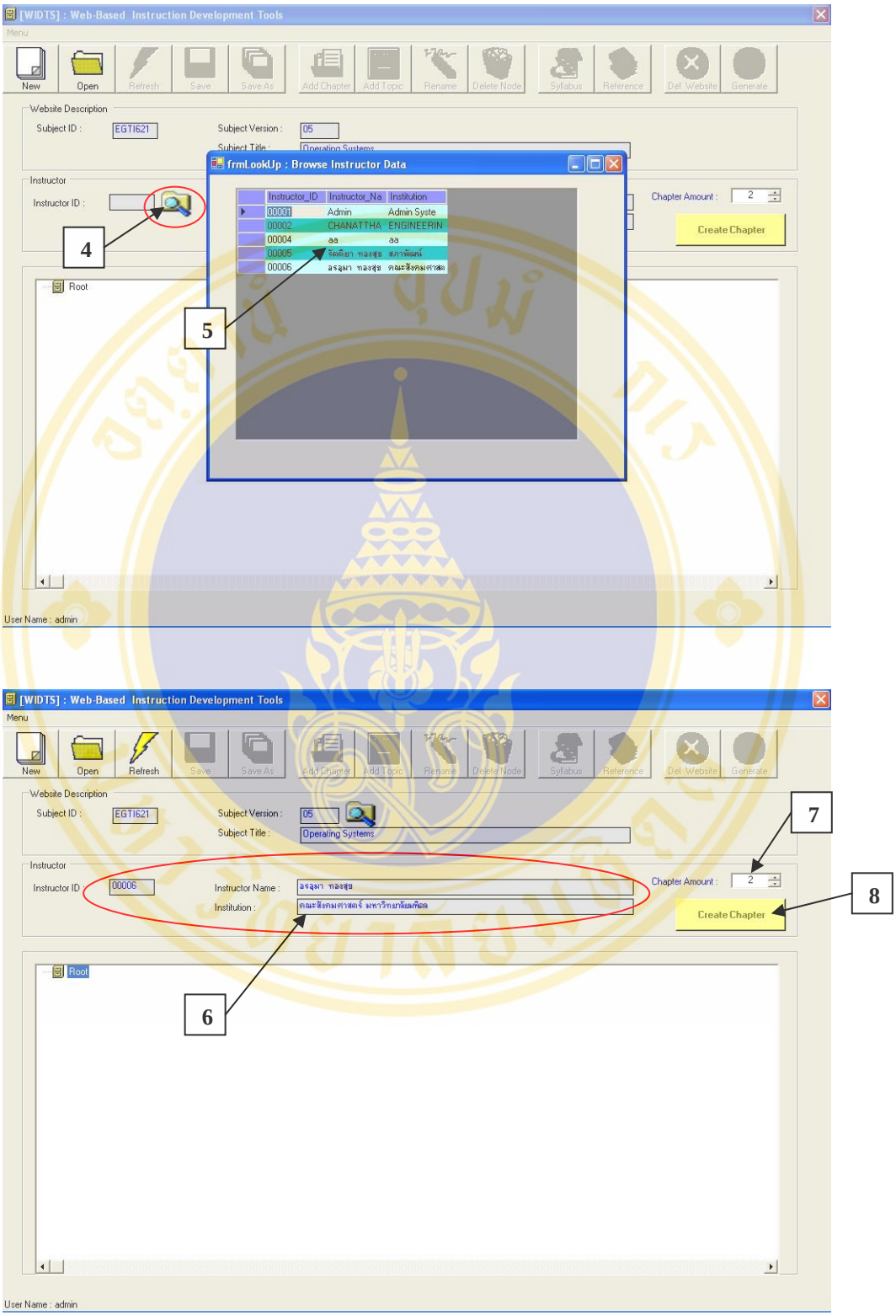
2. Procedure of System

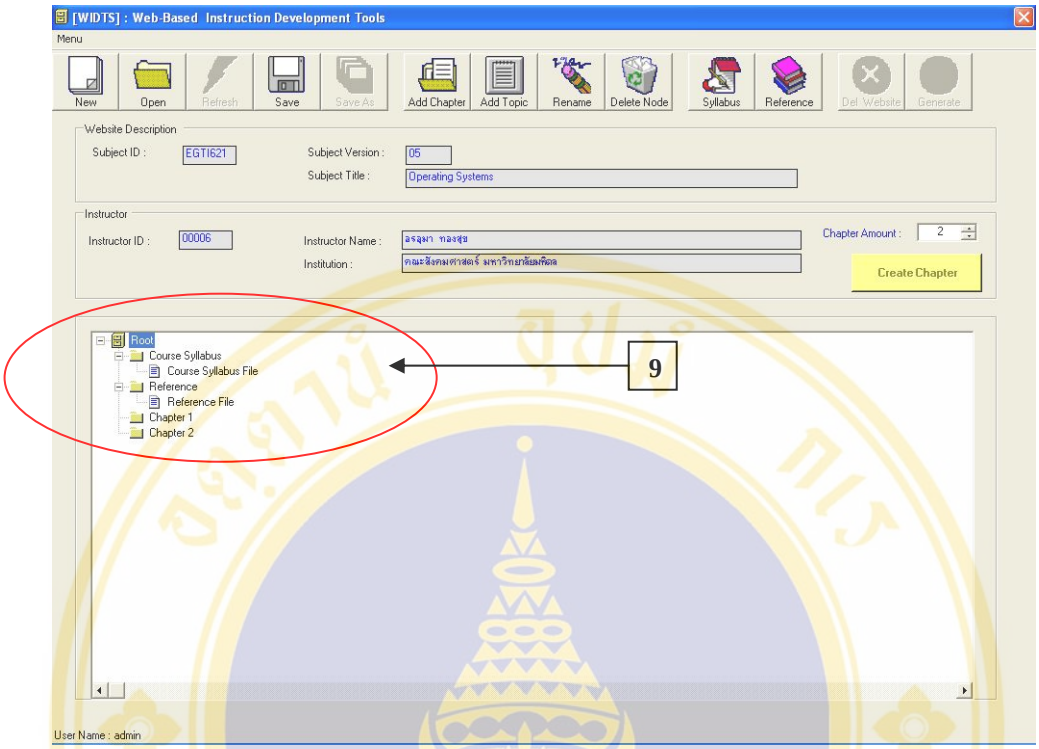
1. Click **"New"** button to create website. The subject list is then appeared.
2. Select subject from the list.
3. Subject Code , Name and Version will be brought (system will generate version automatically)
4. Click "**Browse"** button to select Instructor Code then instructor list is then brought.
5. Select instructor from instructor list
6. Instructor Code, Name & Surname and institution will be brought to the user.
7. Provide number of chapter in chapter amount
8. Click **"Create Chapter"** button
9. System will create Chapter, Course Syllabus Chapter and Reference Chapter







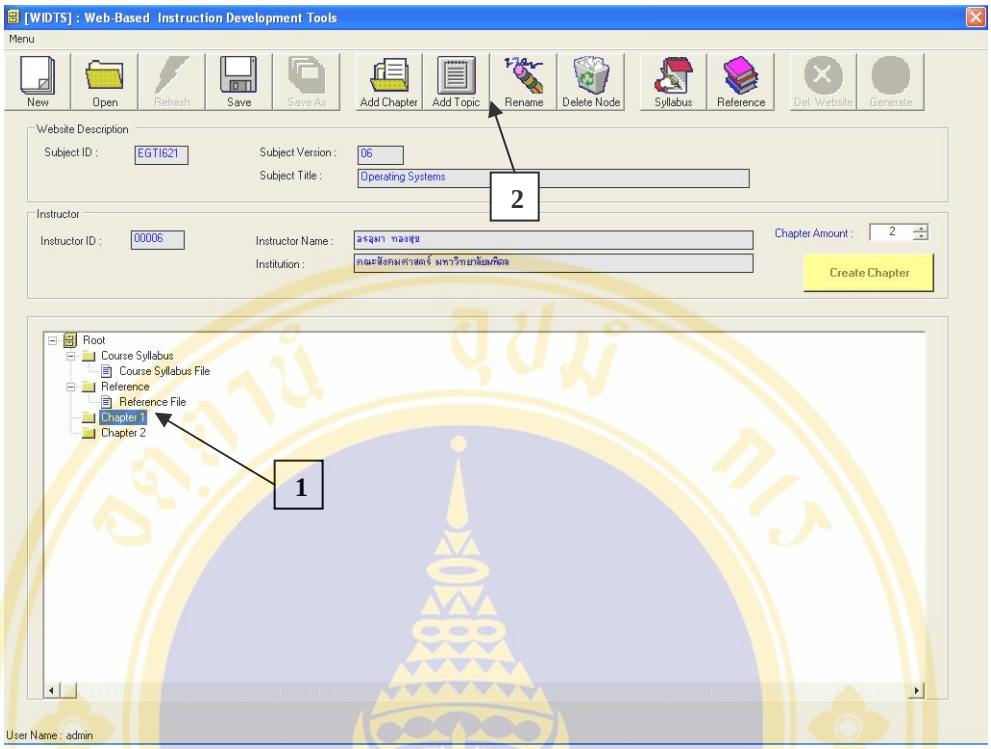


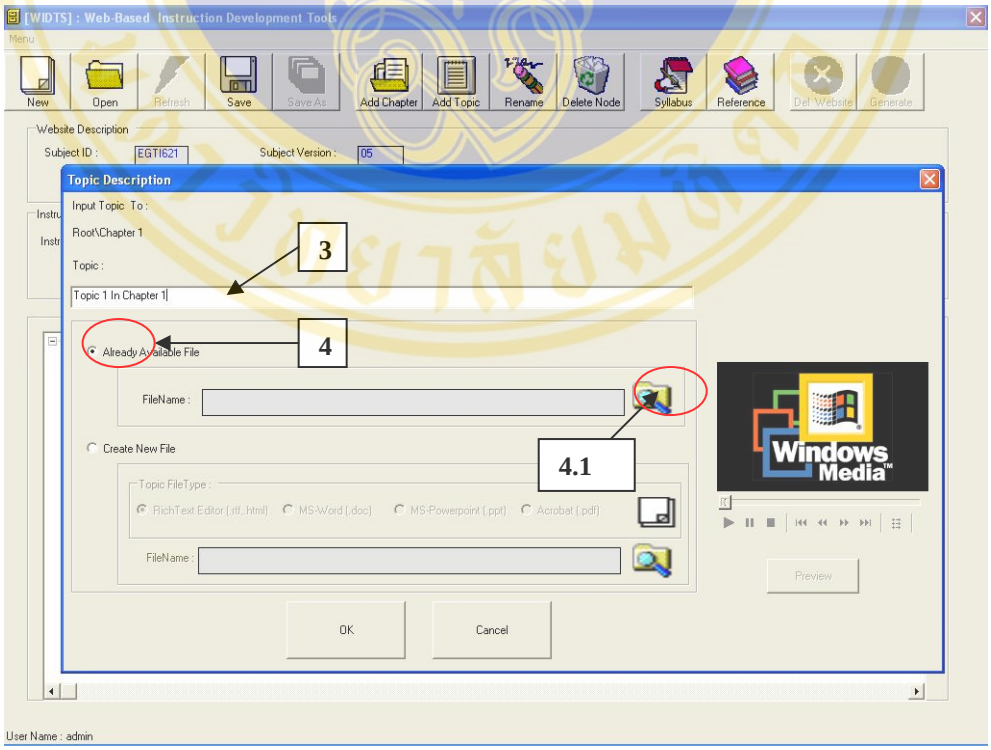


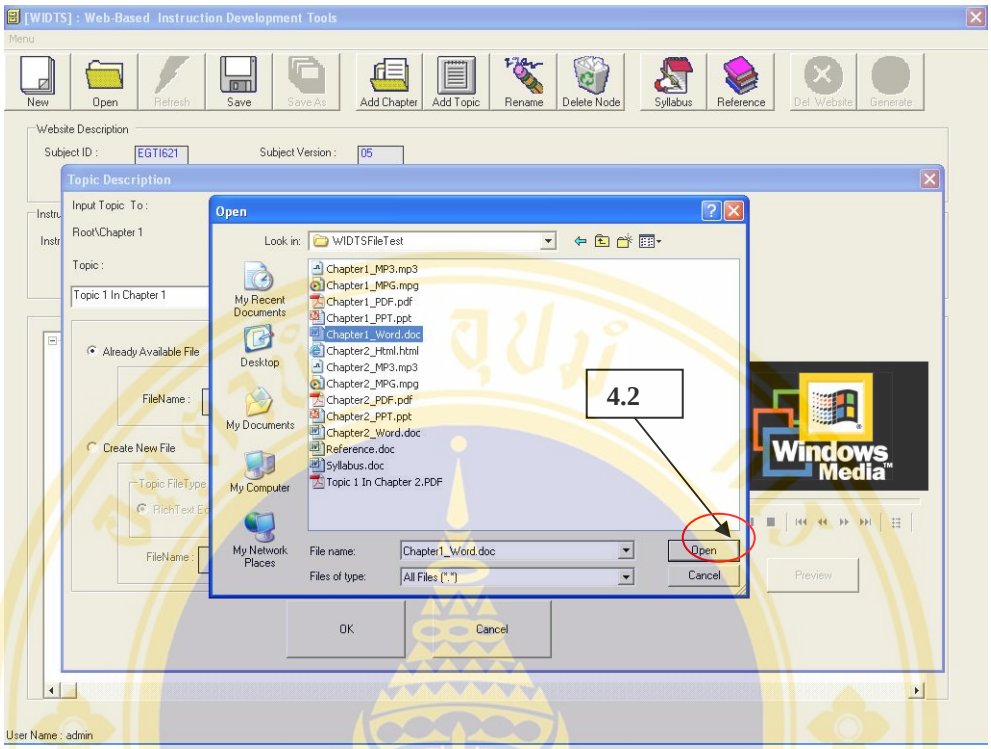
Add Topic in Chapter

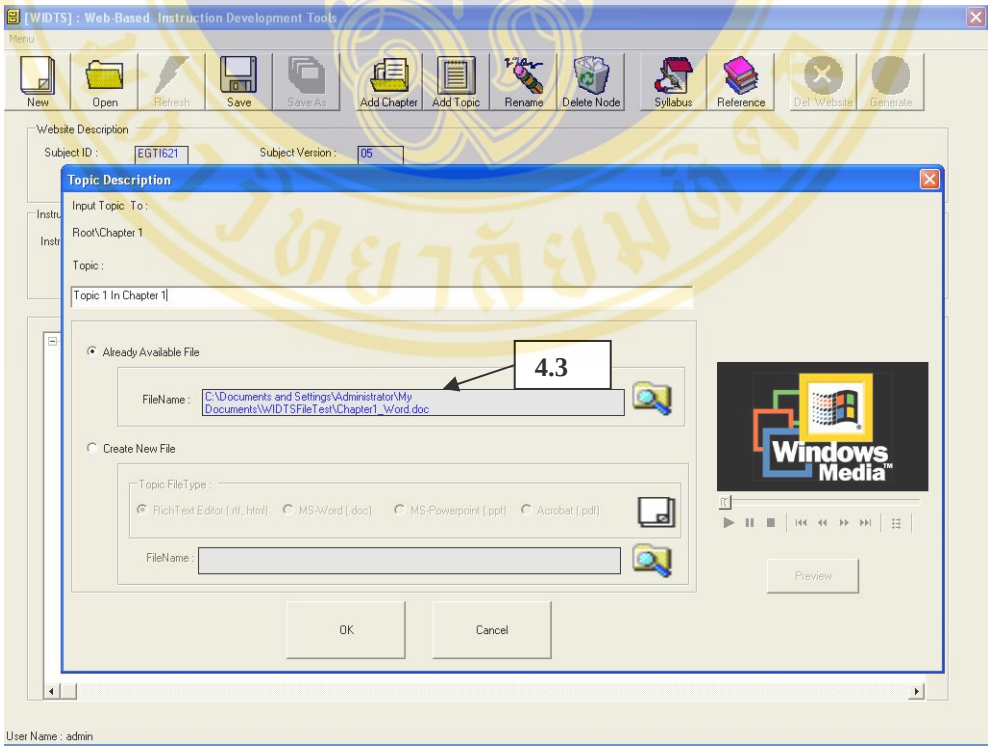
1. Click **Chapter** to add new topic
2. Click **Add Topic** button
3. Provide Topic Description in dialog box
4. If there are already exist files, click option **Already Available File**
   4.1 Click **"Browse"** button for select file
   4.2 Select file then click **"Open"** button
   4.3 Filename and Path Address will appear
5. If you want to create new file, click option **Create New File**
   5.1 Click select file type
   - Click Rich Text Editor to create file with Rich Text Format (.rtf) or Hypertext Markup Language (.html)
     (Remark: Read create file description with Rich Text Editor in Rich Text Editor Topic)
   - Click MS – Word to create file with Microsoft Word (.doc)
   - Click MS – PowerPoint to create file with Microsoft PowerPoint (.ppt)
   - Click Acrobat Reader to create file with Portable Document Format (.pdf)

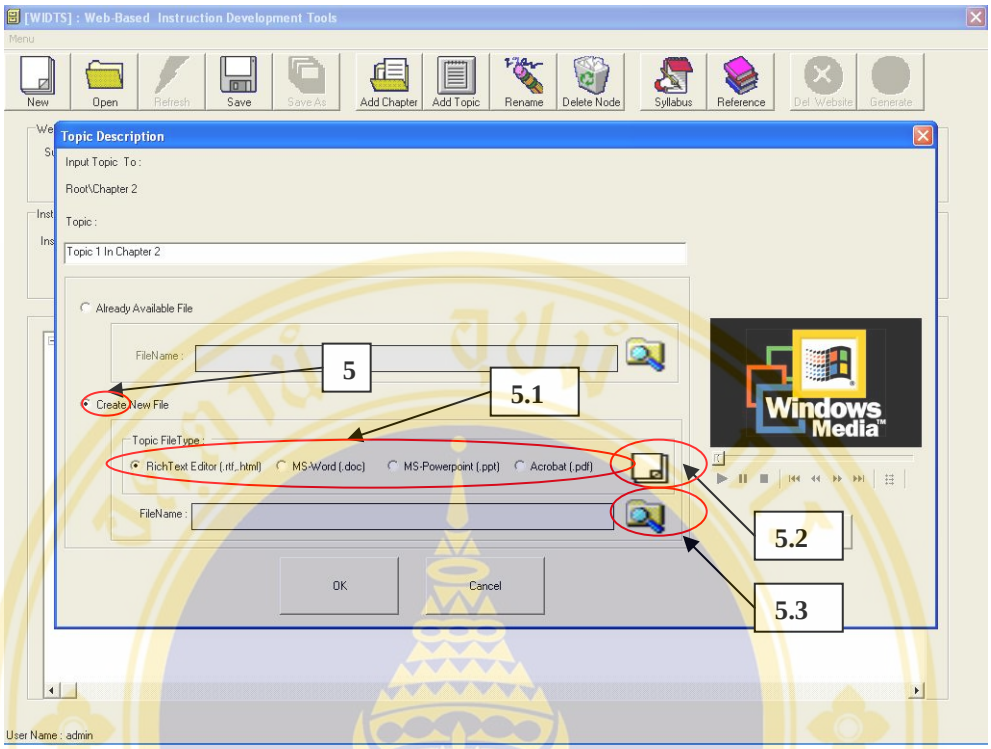
   5.2 Click **"New"** button for open selected software
   5.3 When file is successfully created, click "Browse" to select that file
   5.4 Select designated file, click "Open" button
   5.5 Filename and Path Address will be brought.
6. Click **"OK"** button
7. Output from the above procedure is shown as following
8. Output from add other topic who have icon symbol of their extension file (Remark: System support 5 type of symbol i.e. , .doc , .ppt , .pdf , .mpg and .mp3)

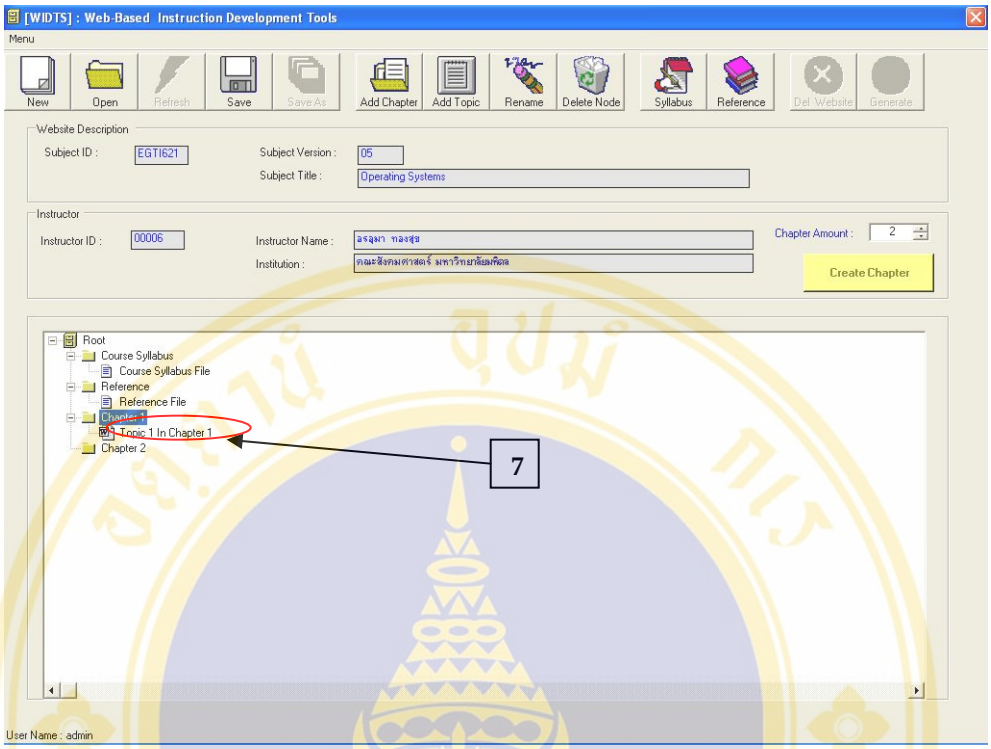


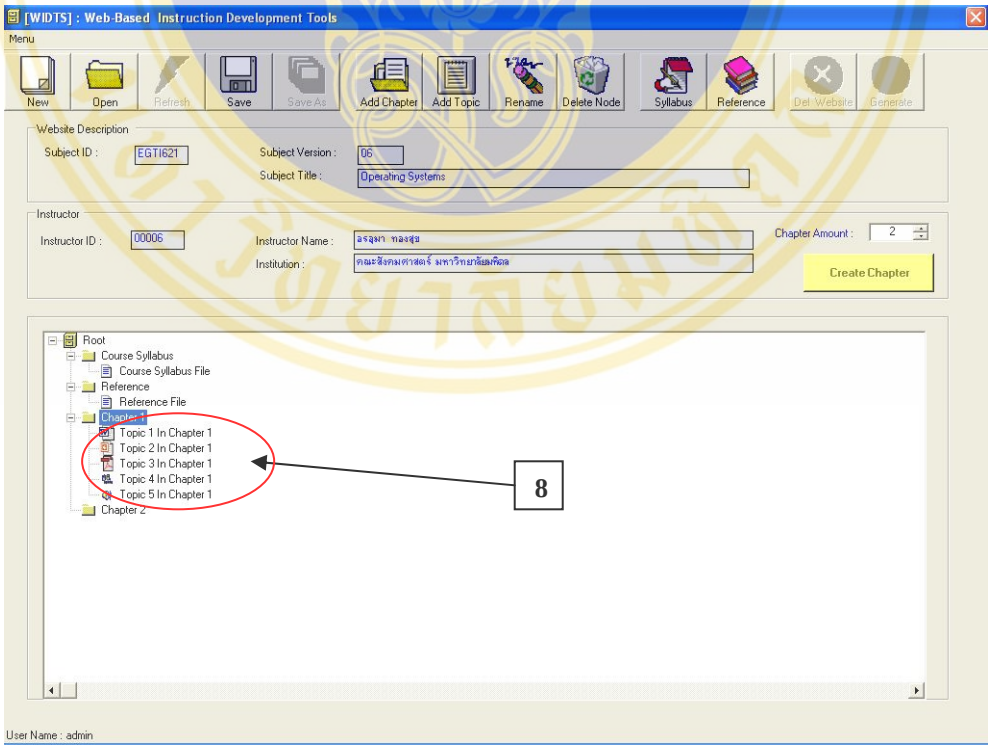




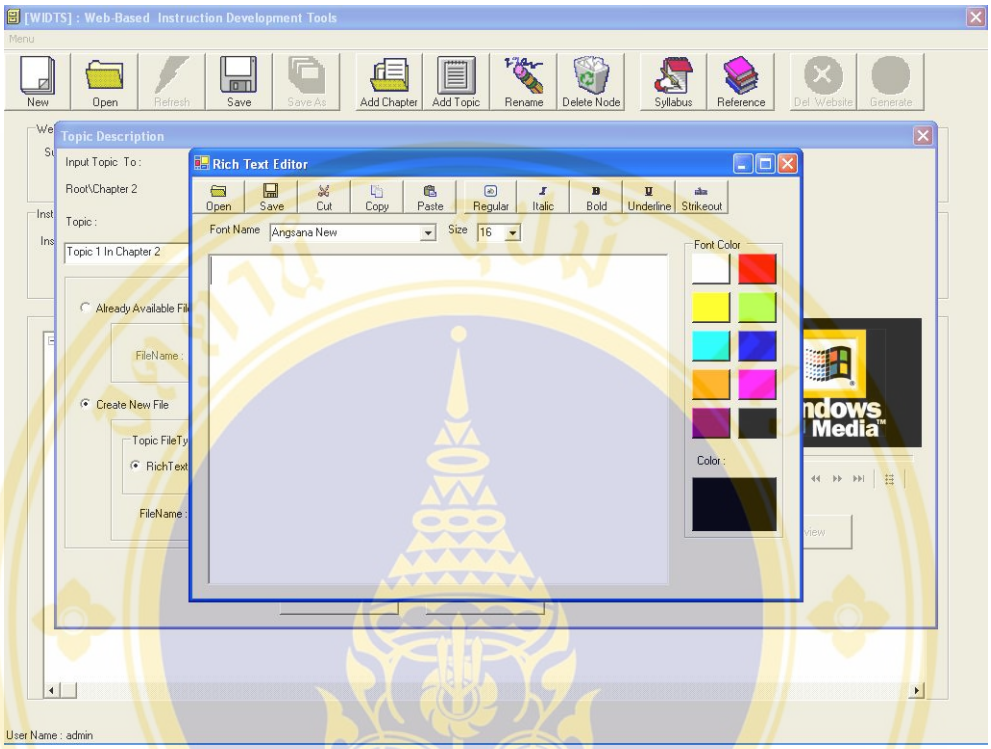




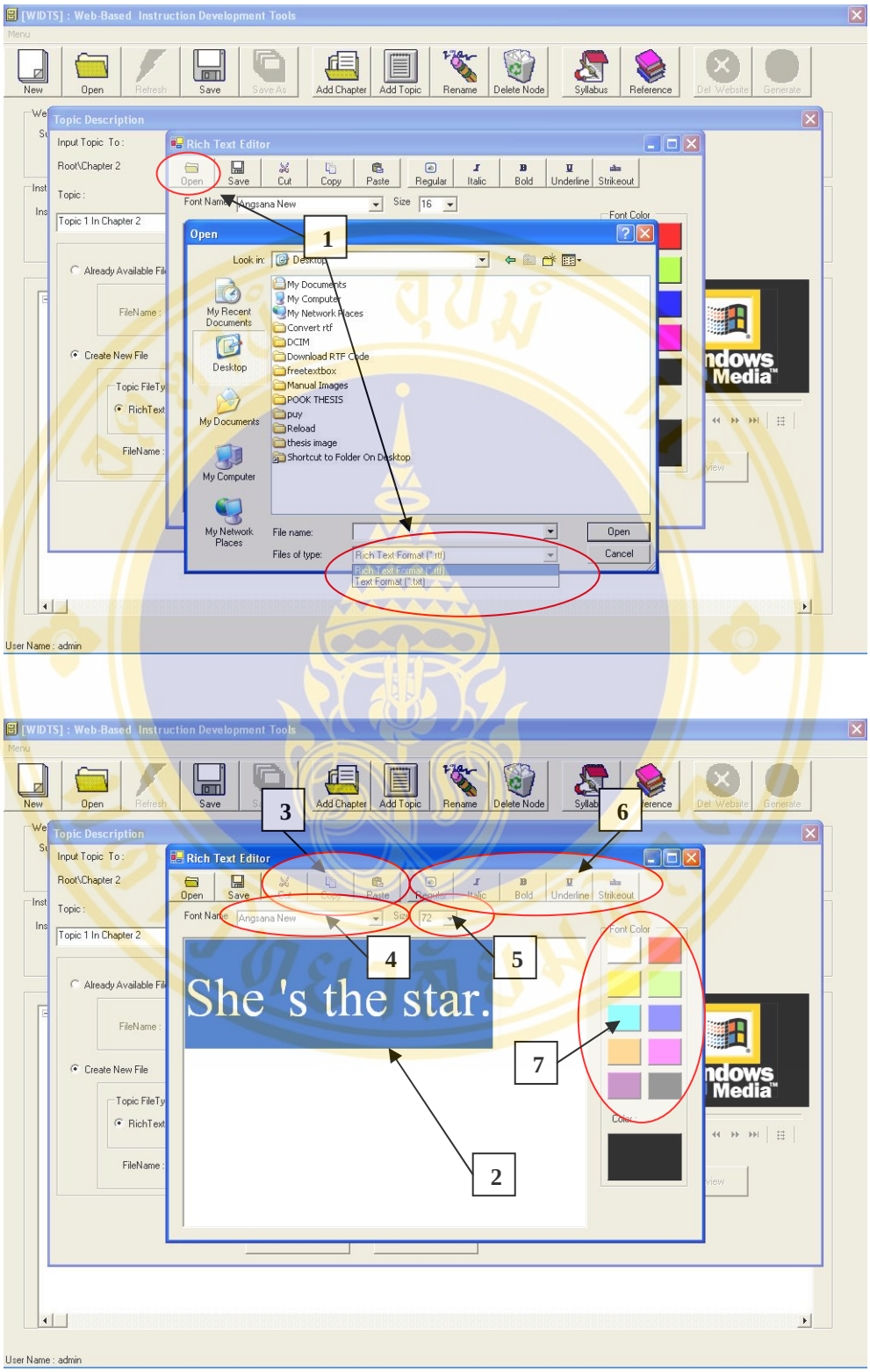


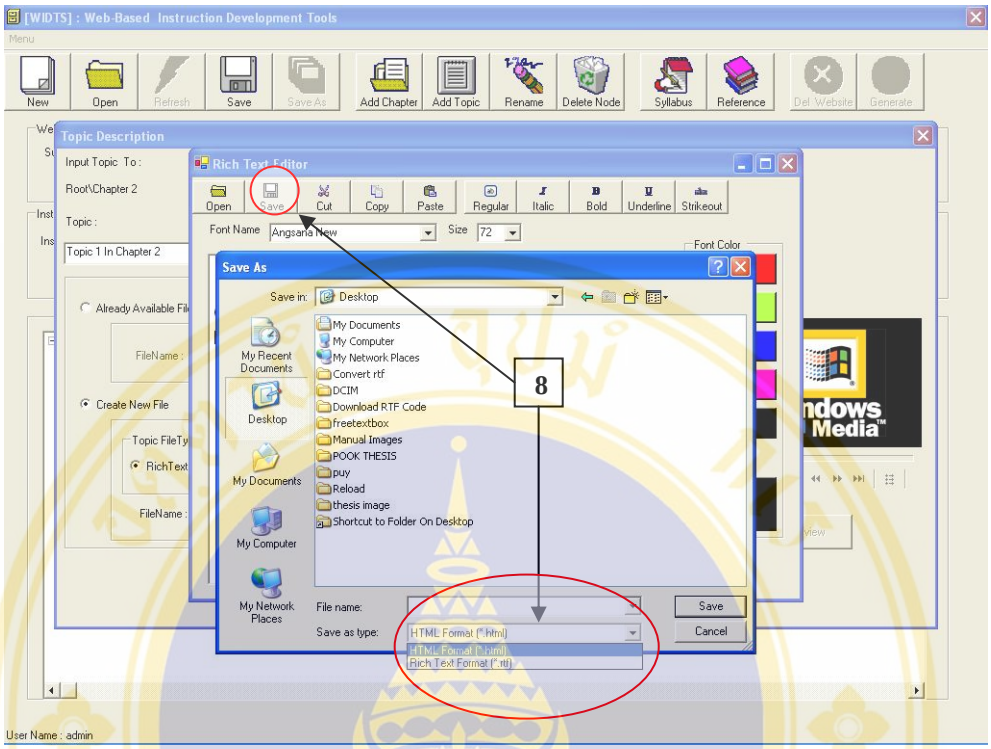


Create file with Rich Text Editor



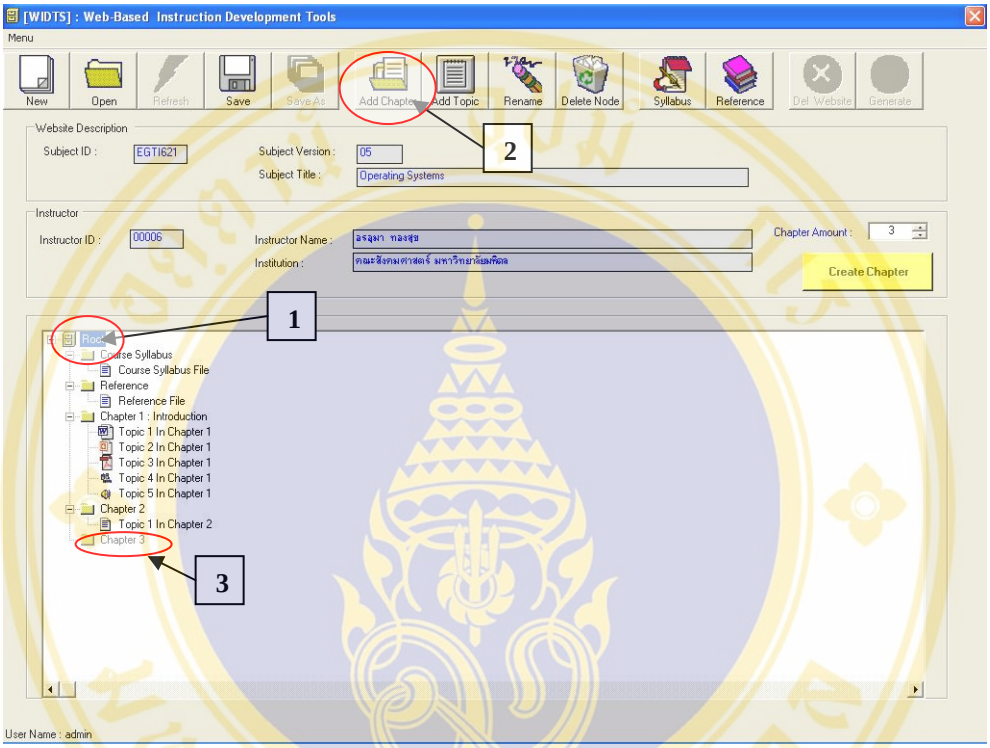
1. Click “Open” button to open file
2. Insert data in editable area part of rich text editor. Drag mouse over the selected message to define property of message
3. To message manage etc. Cut , Copy and Paste
4. To change font name example : Times New Roman
5. To change font size
6. To change font style etc. Regular , Italic , Bold , Underline and Strikeout
7. To change font color
8. Click Save button to save data who selected 2 type is Rich Text Format (.rtf) and Hypertext Markup Language (HTML)





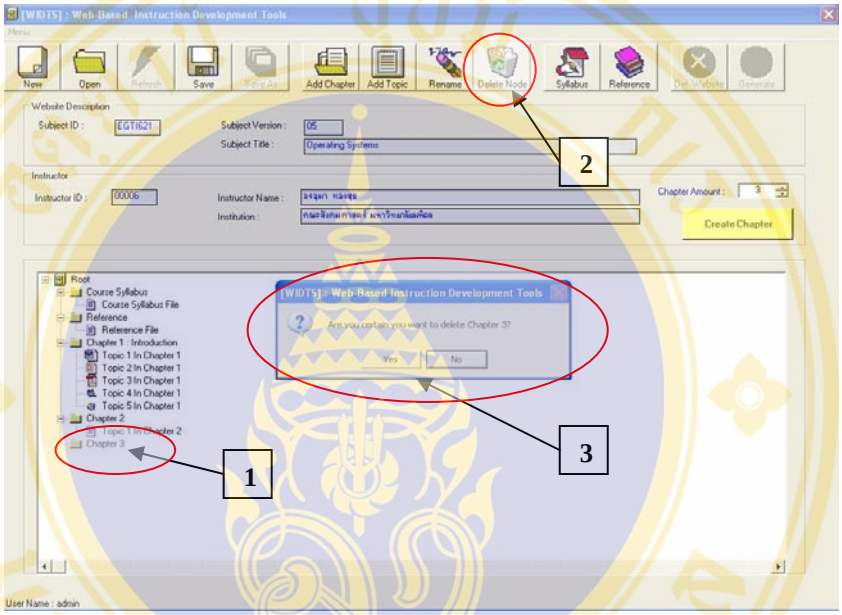
Add Chapter

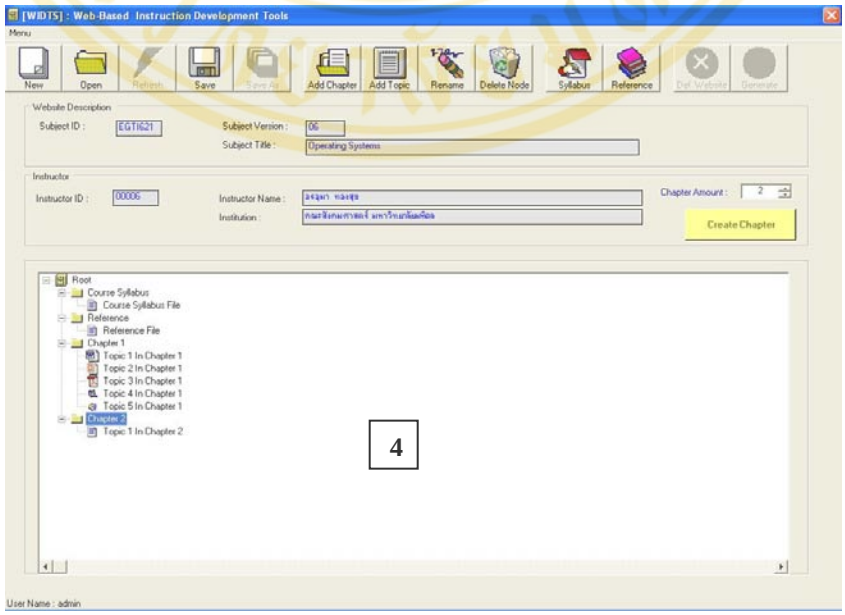
1. Click **Root** Node
2. Click **"Add Chapter"** button
3. Output from add chapter



Delete Chapter / Topic

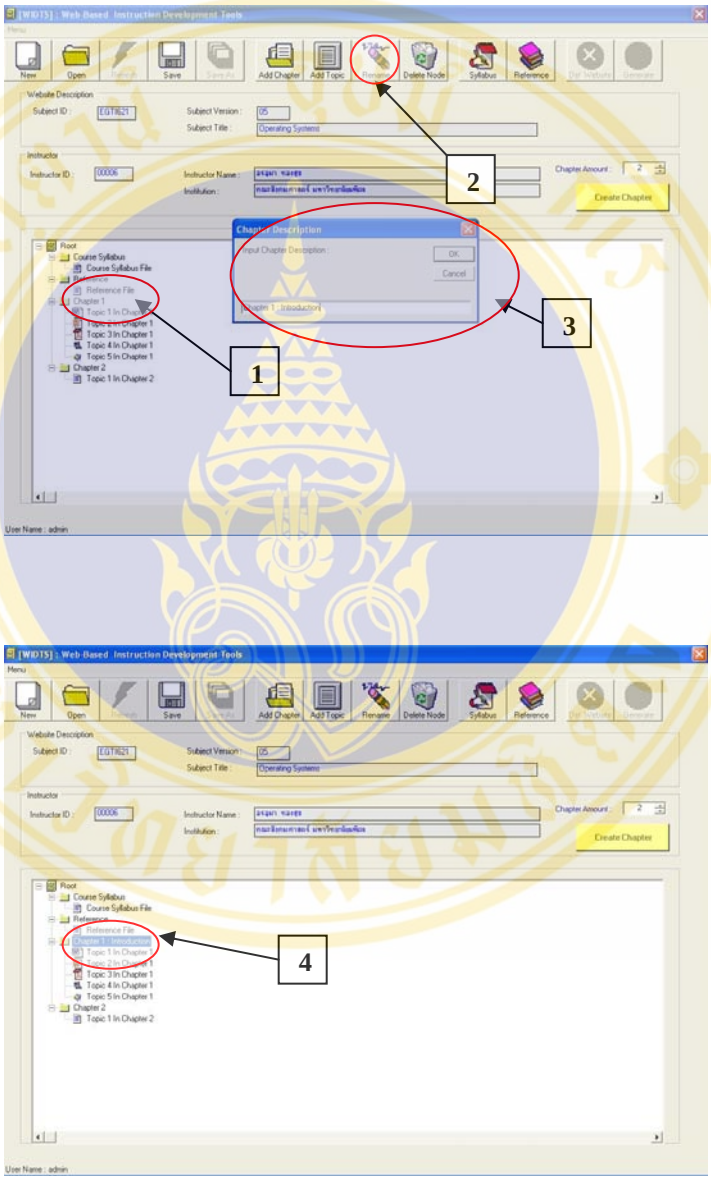
1. Click selected chapter or topic to delete
2. Click **"Delete Node"** button
3. Confirm delete message will appear. To delete click **"Yes"** button or "**No"** to cancel
4. Output from delete selected chapter or topic





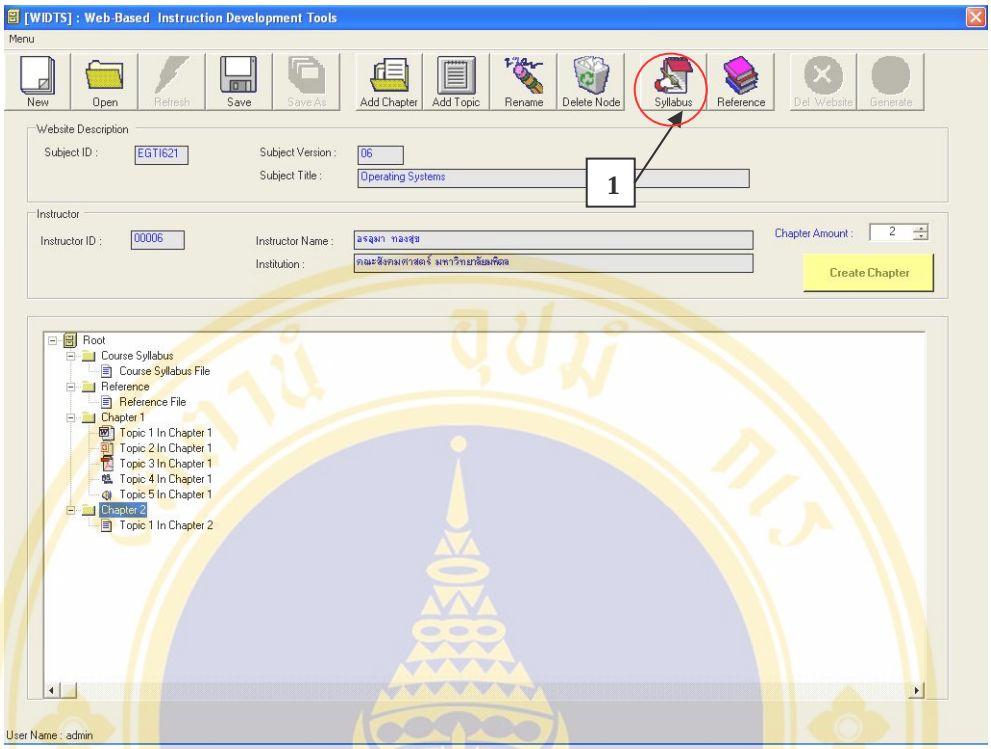
Rename Chapter / Topic

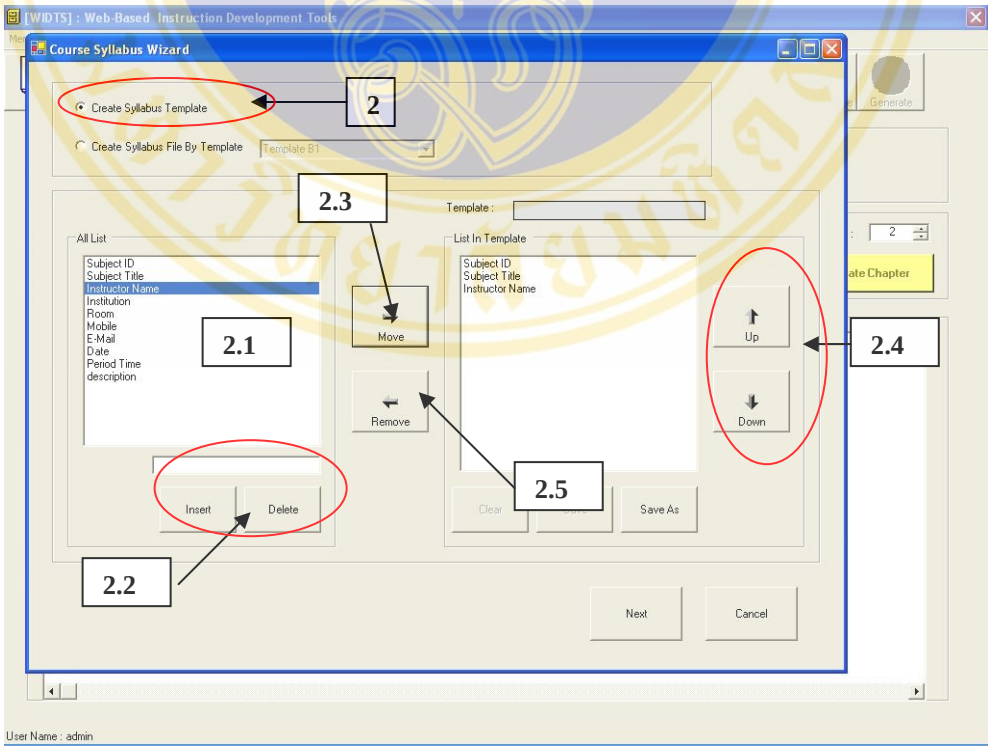
1. Click selected chapter / topic
2. Click **"Rename"** button
3. Input Chapter / Topic Description then click **"OK"** button
4. Output from rename chapter / topic

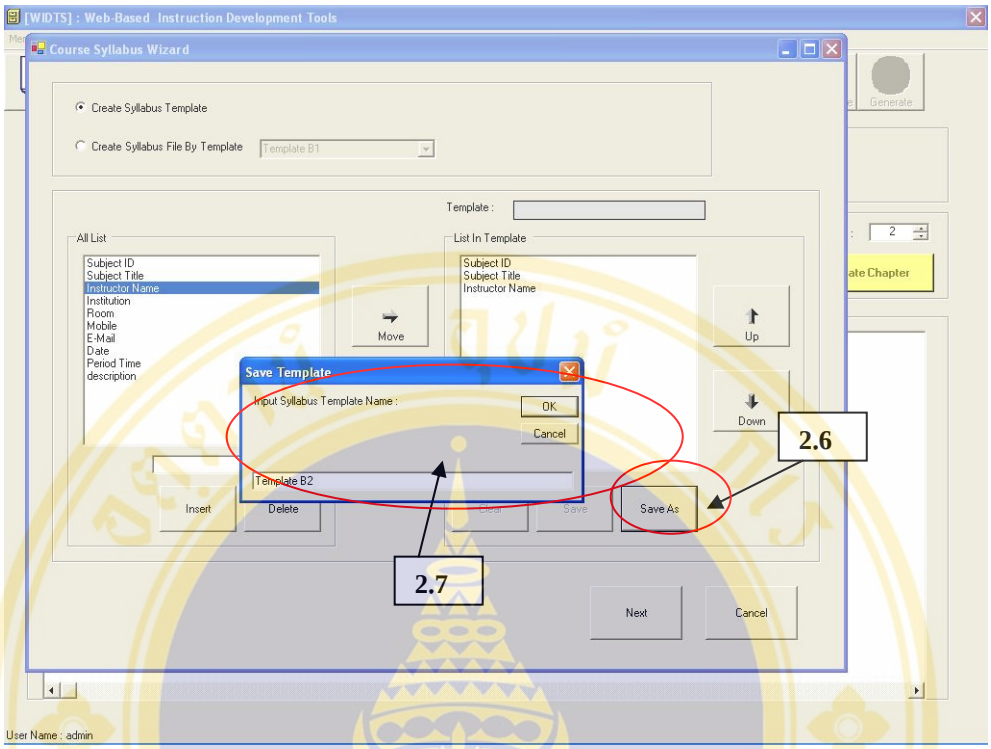


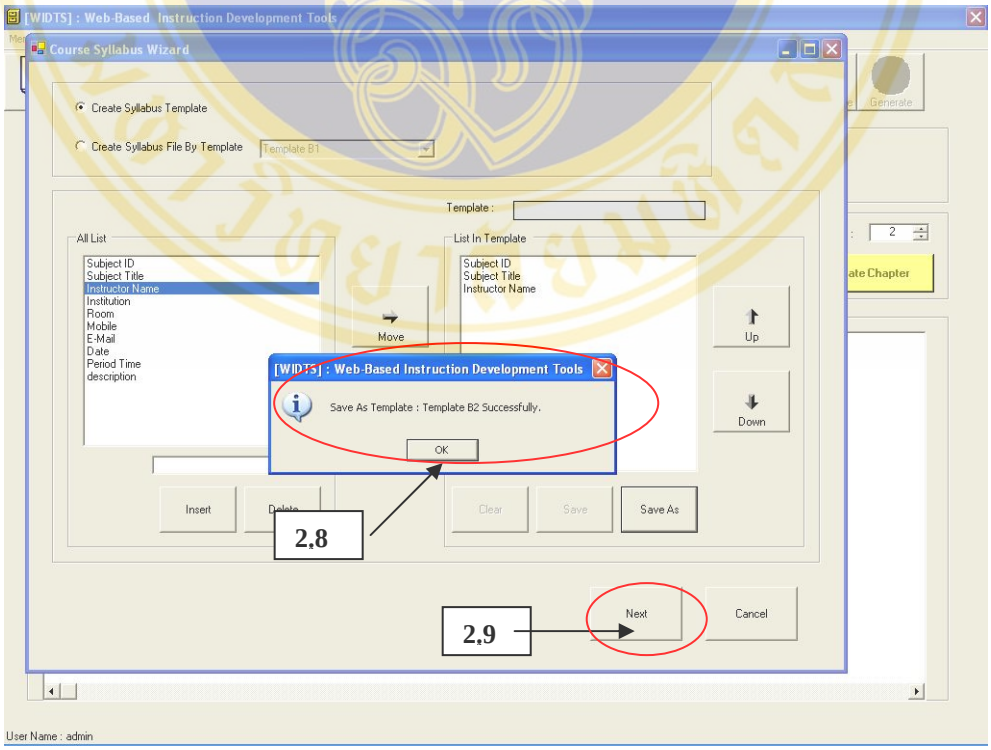
Create Course Syllabus File

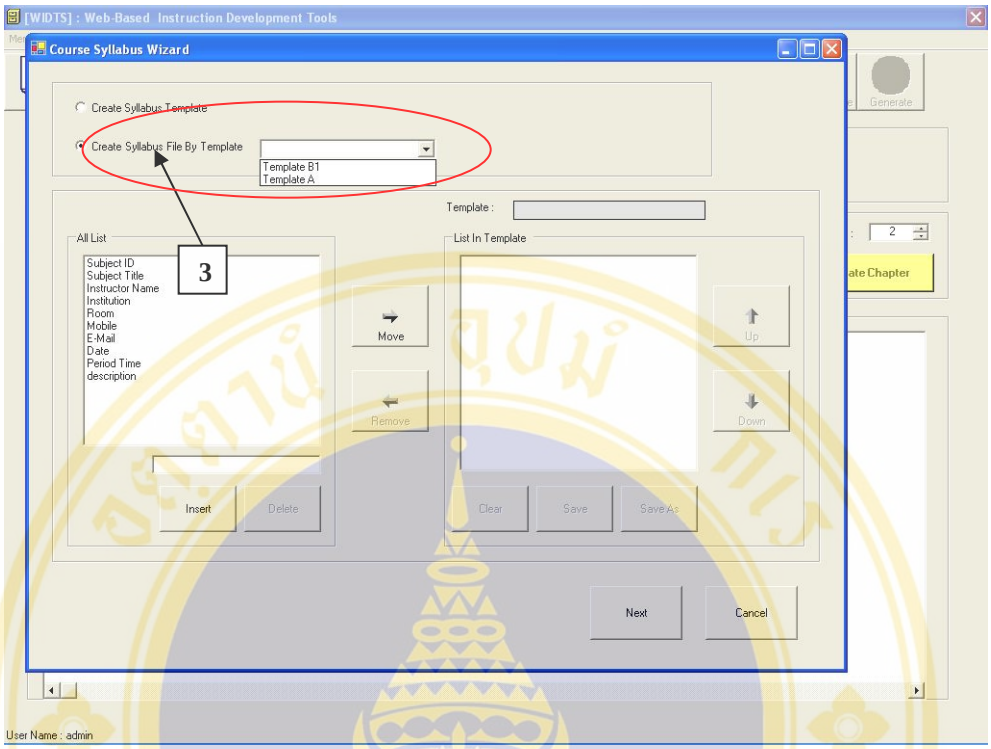
1. Click **"Syllabus"** button
2. If you click option **Create Syllabus Template**
   2.1 In part of All Topic is list of all Syllabus
   2.2 To insert or delete list in All Topic etc. Click **"Insert"** button. Click **"Delete"** button to delete the selected list.
   2.3 Select list in All Topic and click **"Move"** button for move to List in Template
   2.4 Click **"Up"** button or **"Down"** button for move index of List in Template
   2.5 To delete List in template, click **"Remove"** button
   2.6 To Save Template, click **"Save As"** button
   2.7 Provide Template Name and click **"OK"** button
   2.8 Successfully Message will appear when save template successfully
   2.9 Click **"Next"** button
3. If you click option **Create Syllabus File by Template**
   3.1 Select Template (Display system template and own template only)
   3.2 You could Insert , Edit Topic in template
   3.3 Click **"Next"** button
4. Insert data in Syllabus
5. Click **"Next"** button
6. Select date in calendar of schedule
7. Provide schedule plan description
8. Click "**Next"** button for insert schedule data
9. Click **"Finish"** button

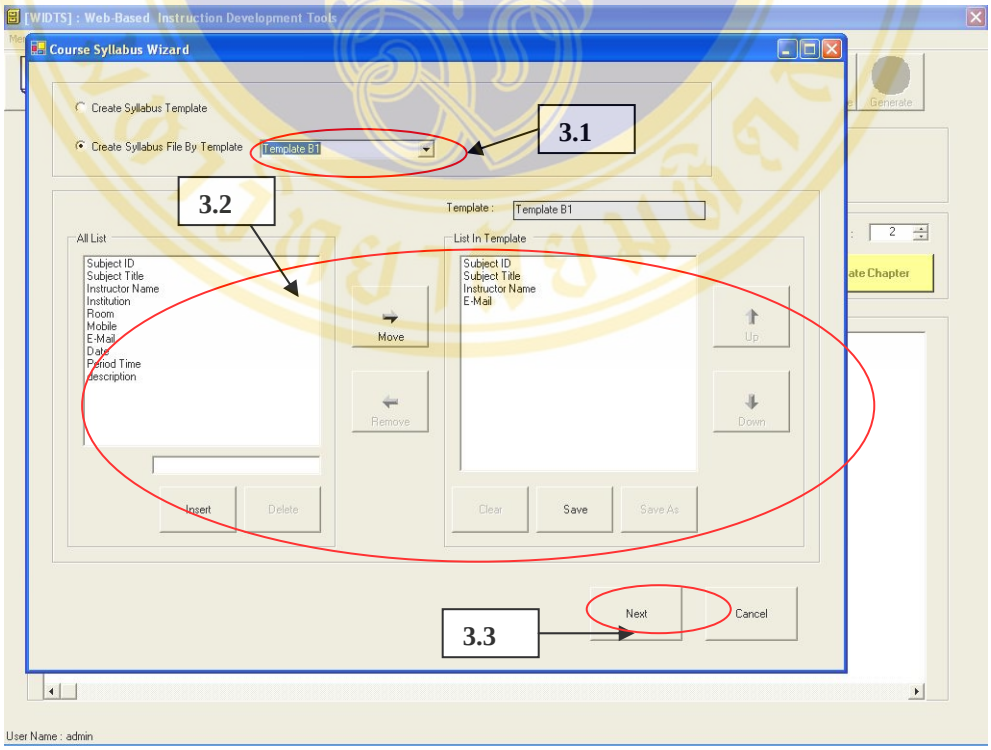


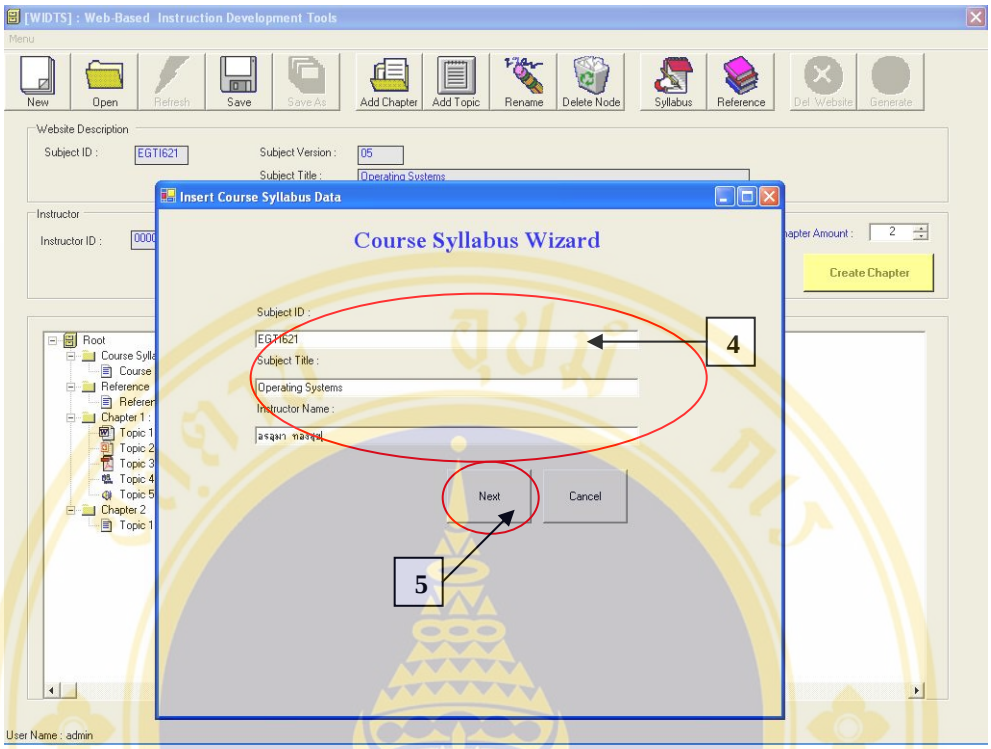


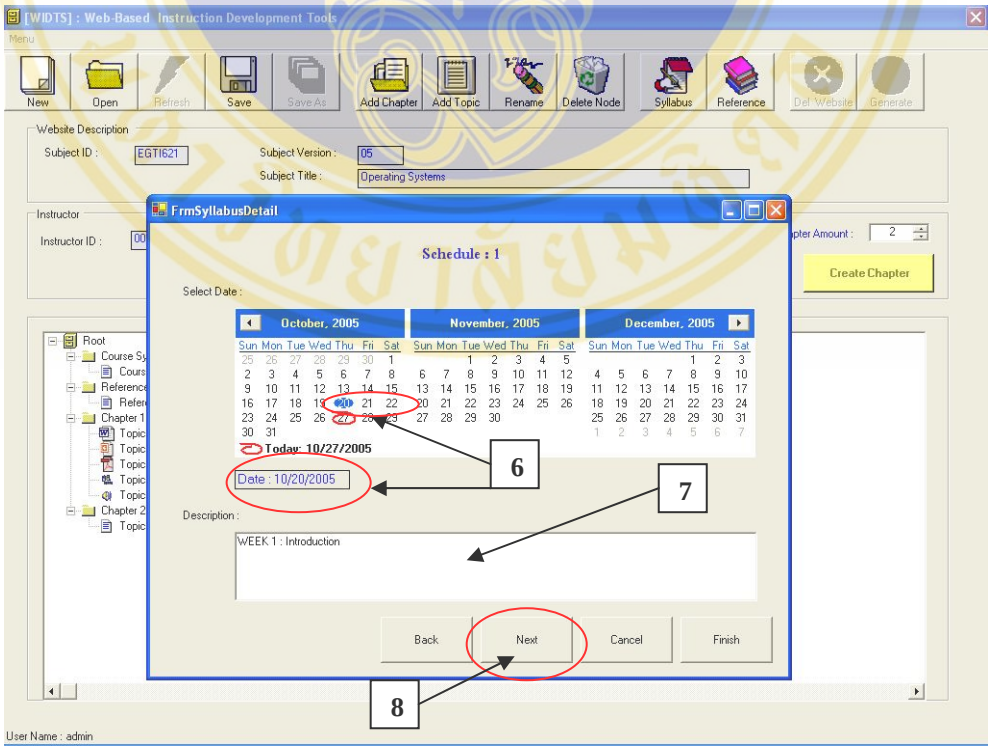


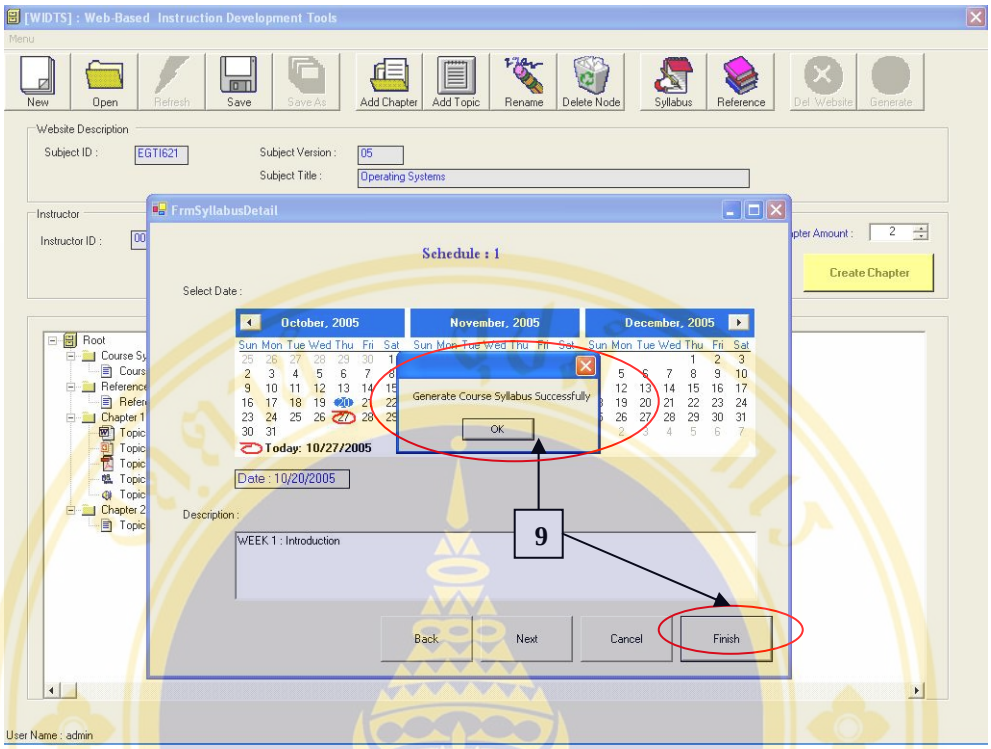






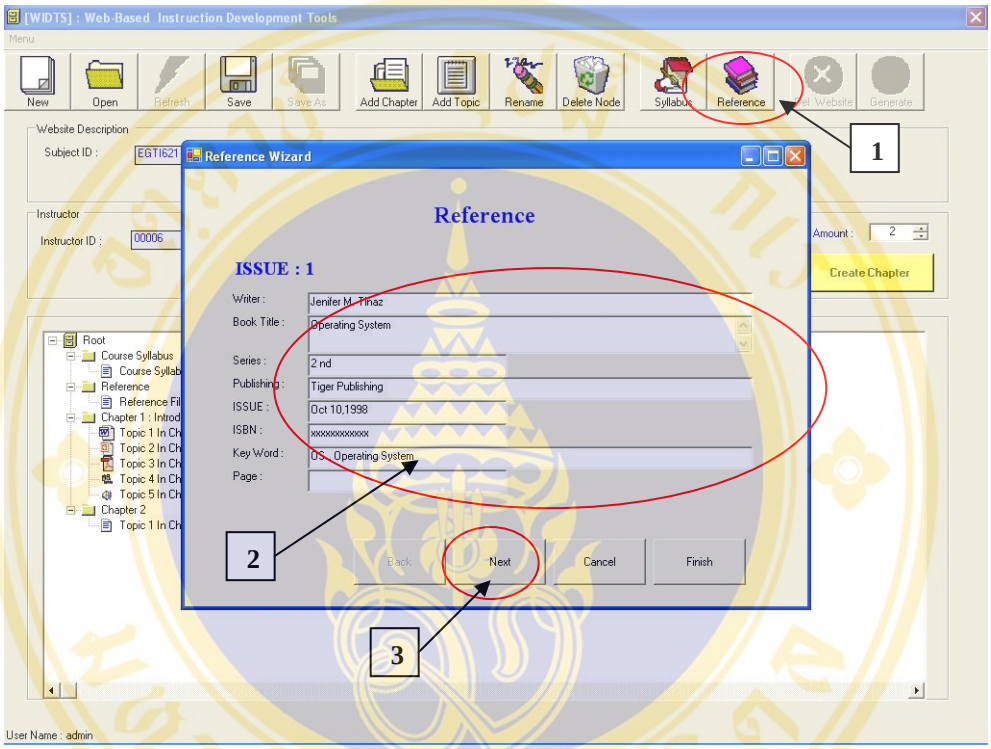


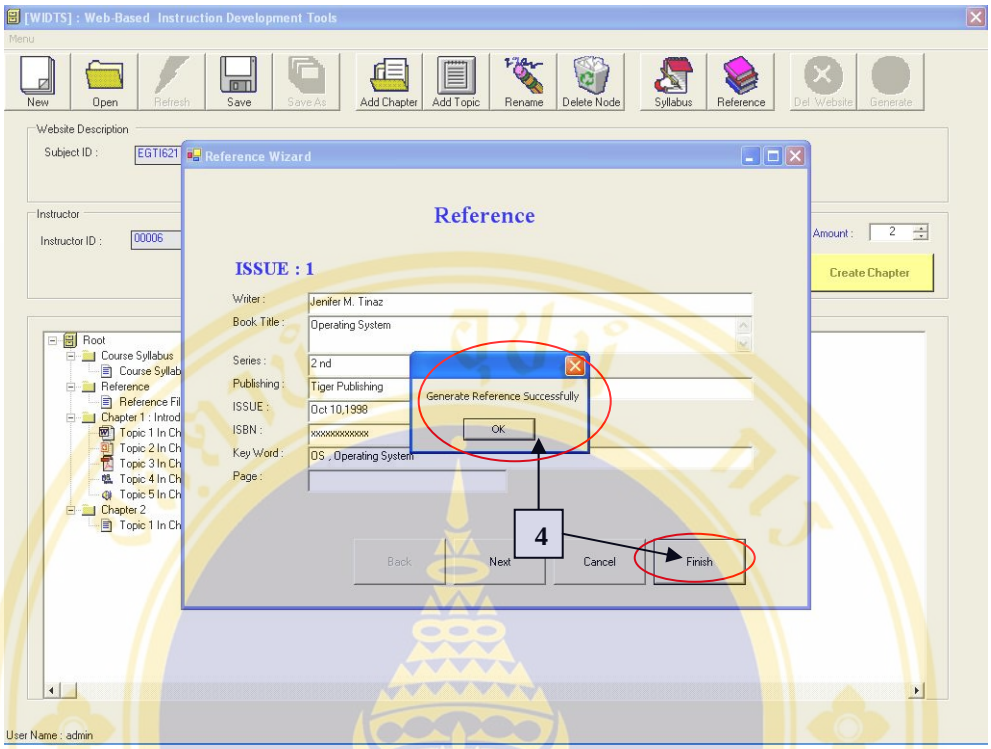




Create Reference File

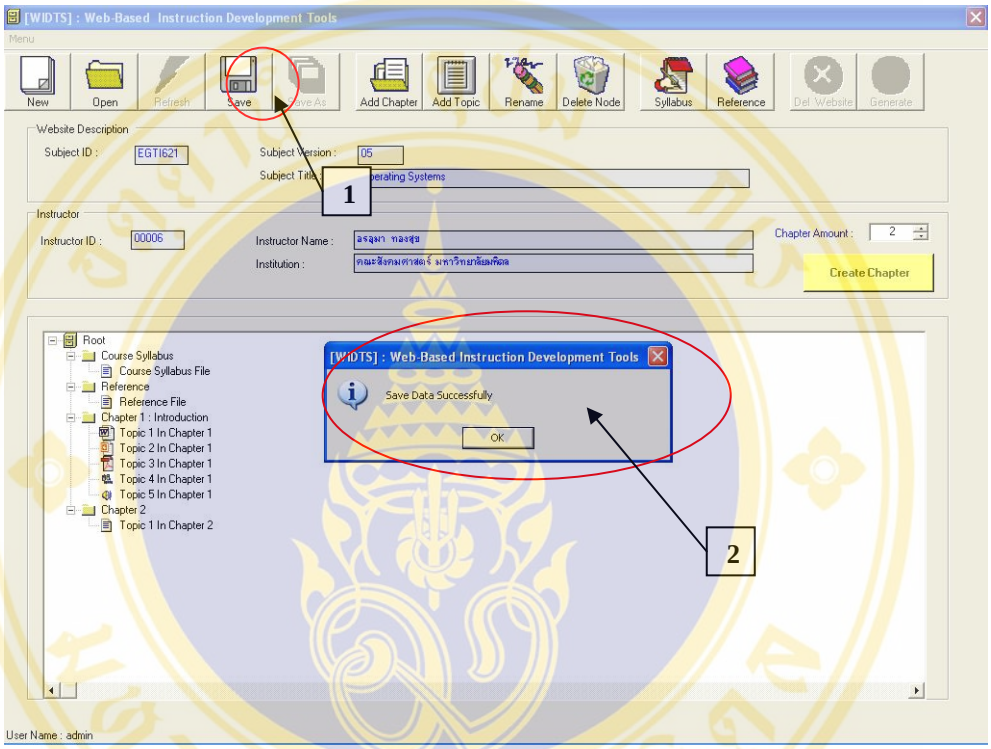
1. Click **“Reference”** button
2. Provide reference data
3. Click **“Next”** button for insert reference data
4. Click **“Finish”** button





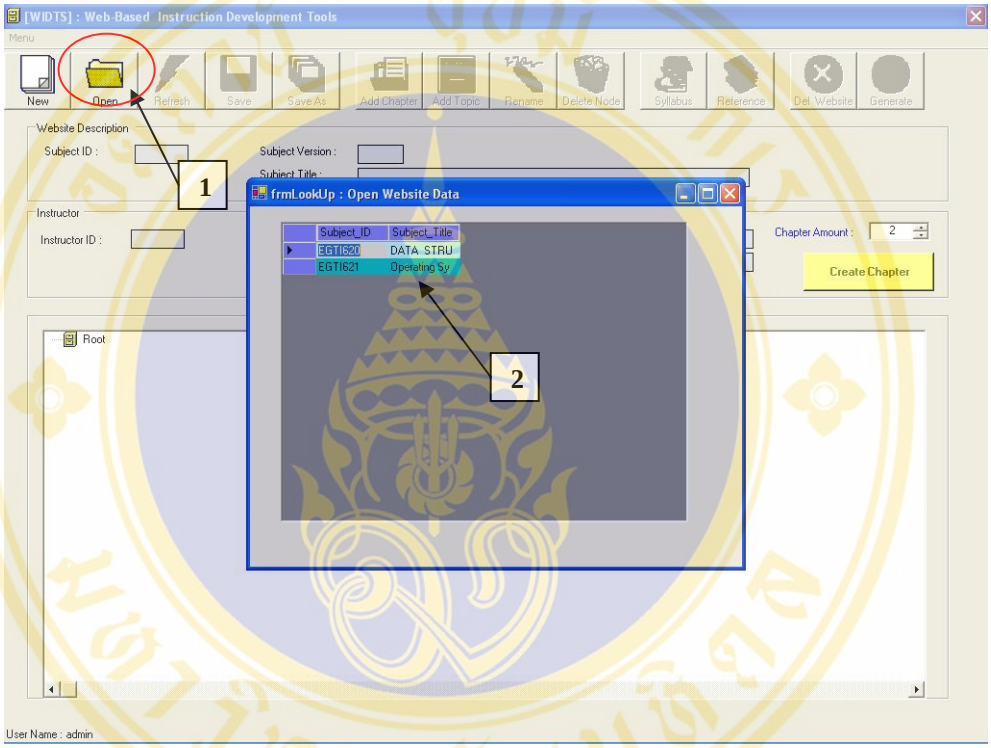
Save Data

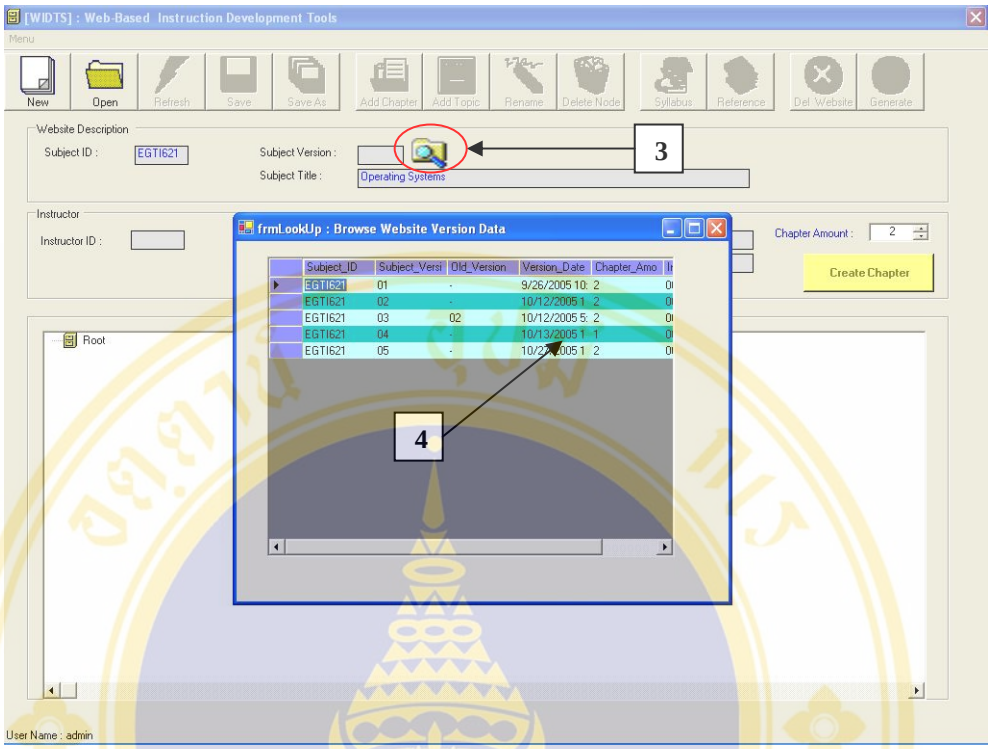
1. Click **"Save"** button
2. If you work is successfully save, the information message box will be brought to you.

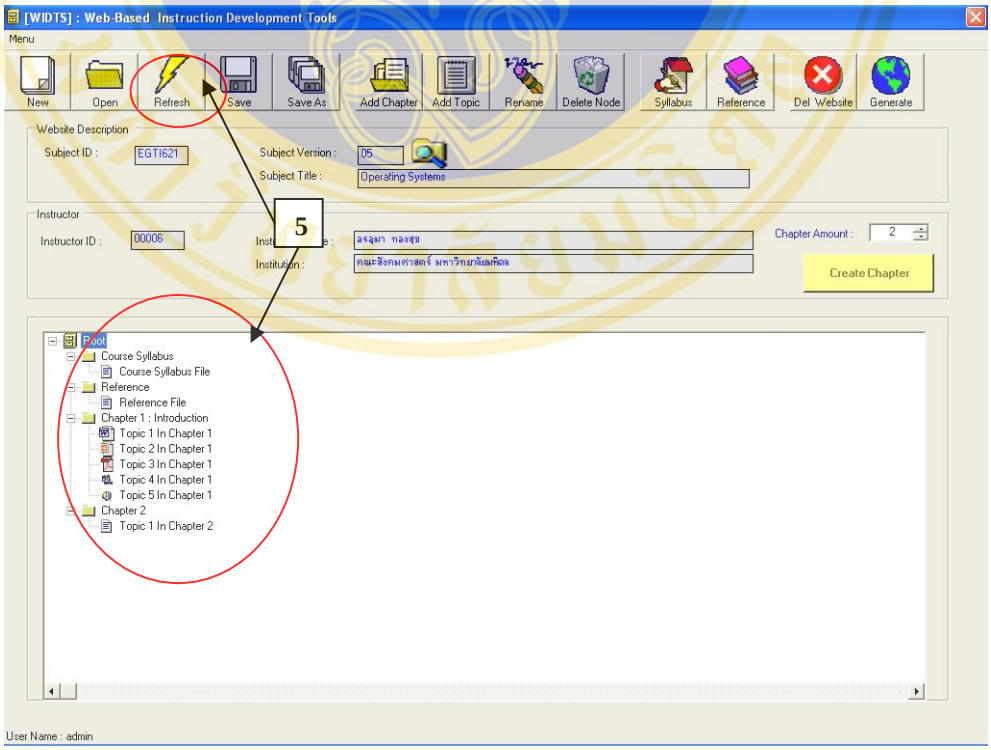


Open Data

1. Click **“Open”** button
2. Select subject in subject list
3. Click **“Browse”** button in version part
4. Select version in version list
5. Click **“Refresh”** button for display data

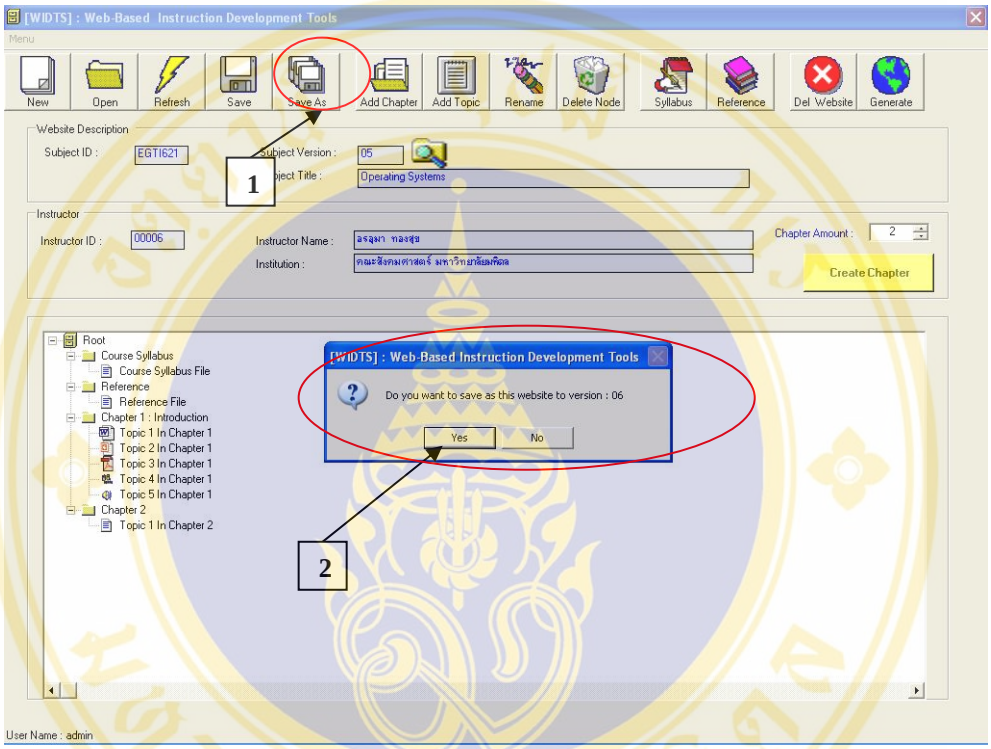






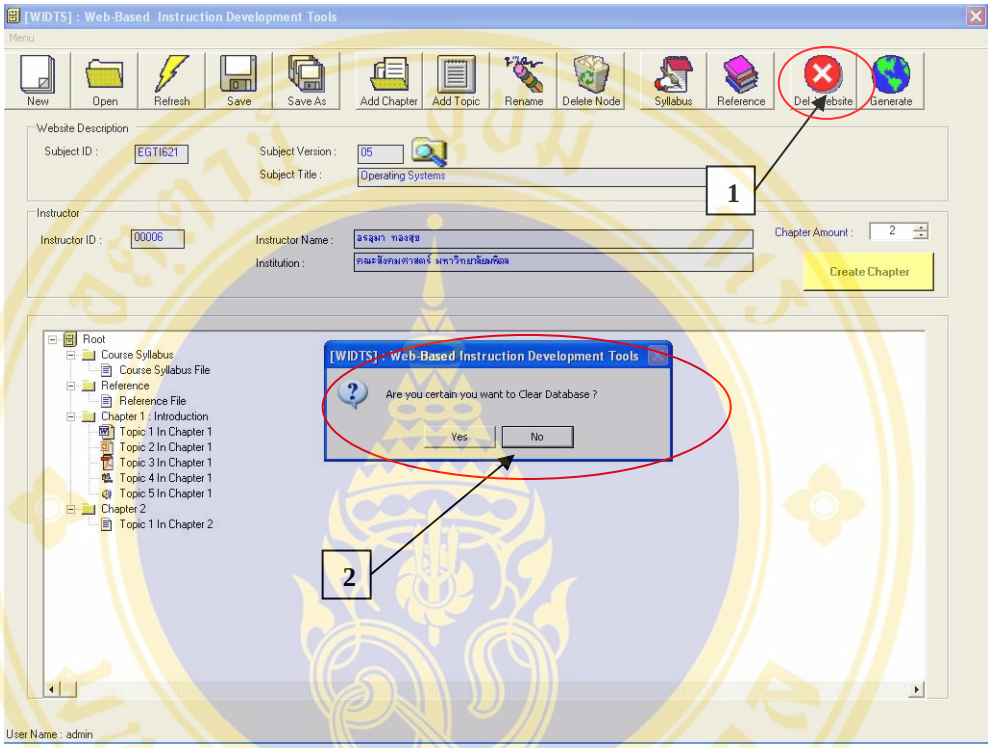
Save As Data

1. Click **“Save As”** button for change version
2. Save as successfully message will be brought to you. Click **“Yes”** button to confirm change number of version who generated automatic.



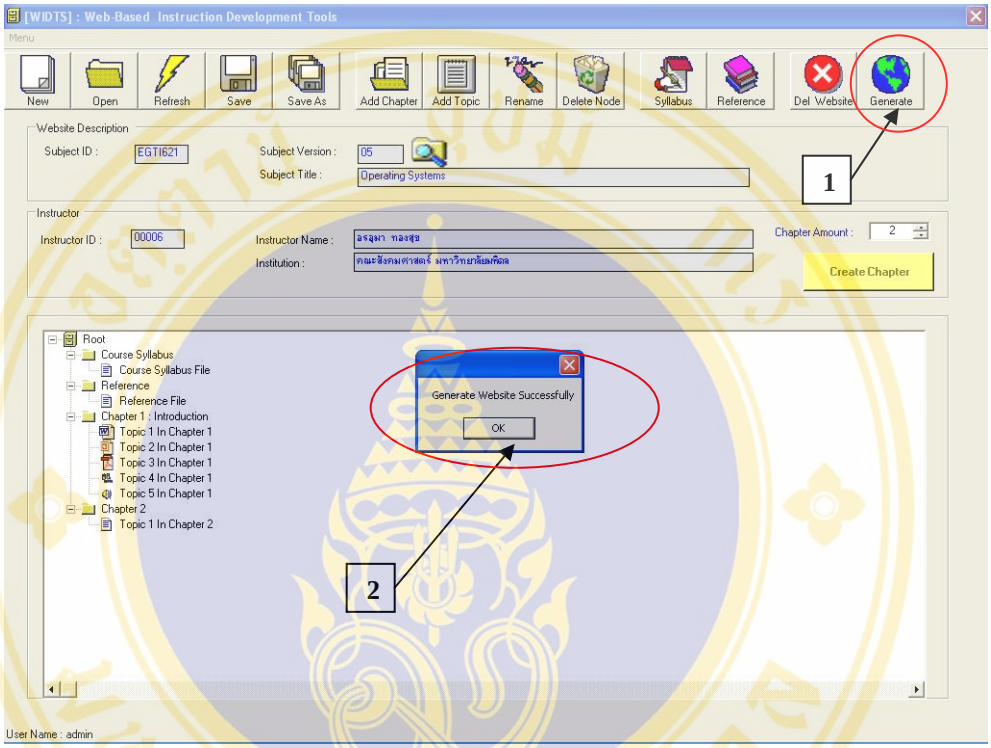
Delete Website Data

1. Click **"Del Website"** button for delete website data
2. Confirmation message will appear. To delete then click **"Yes"** button



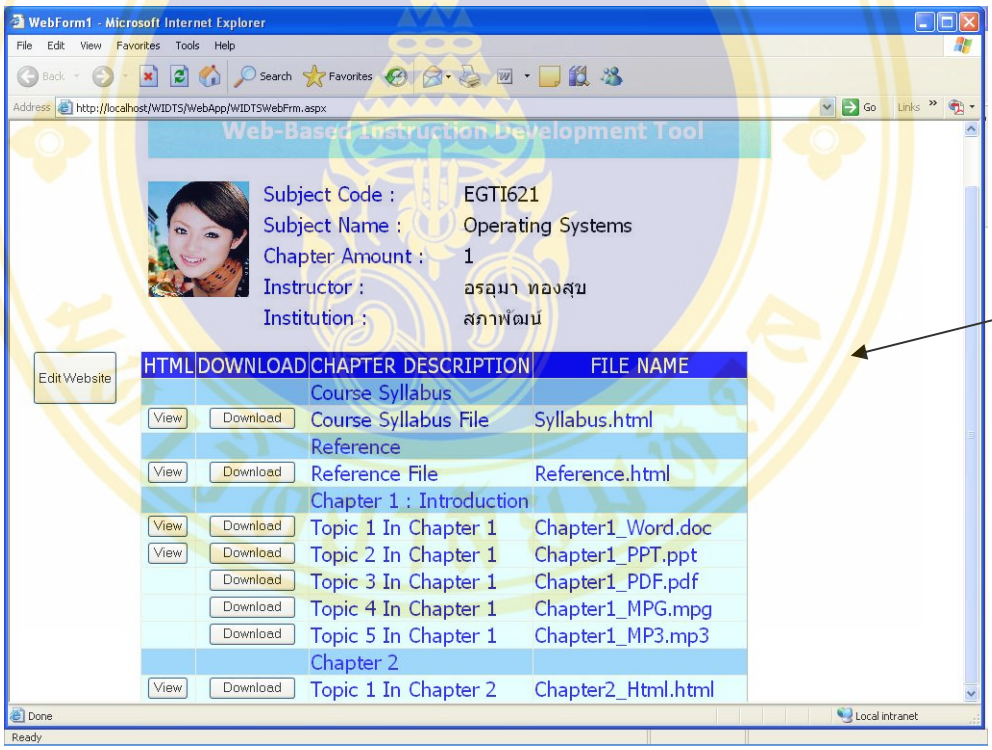
Generate Website

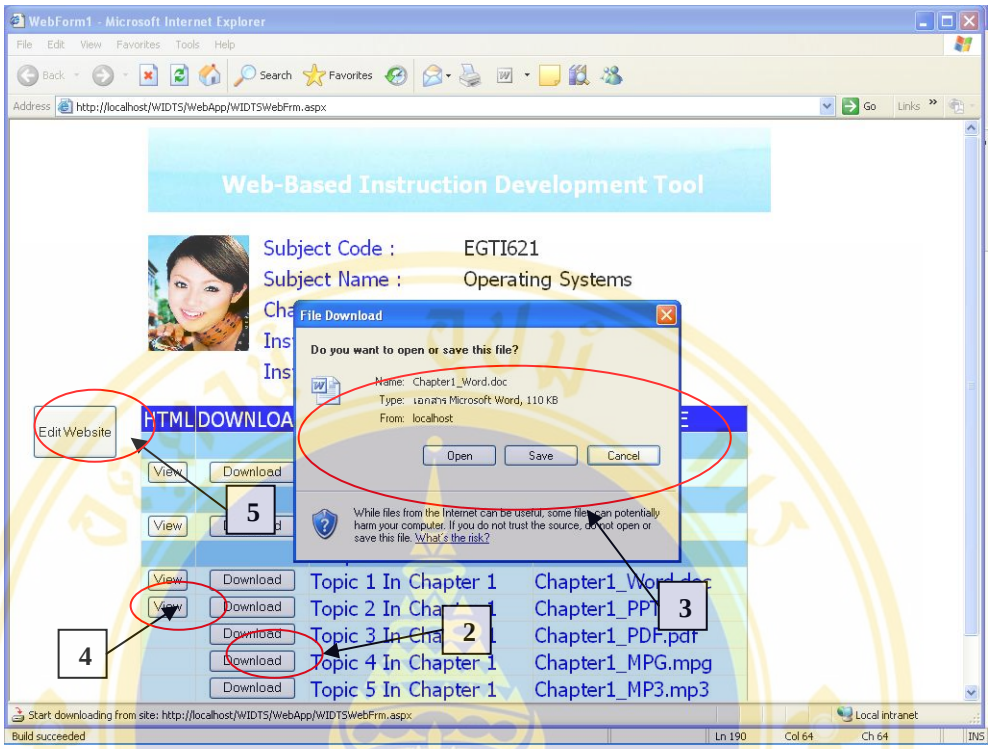
1. Click **"Generate"** button
2. Generate website successfully message will be brought to you.

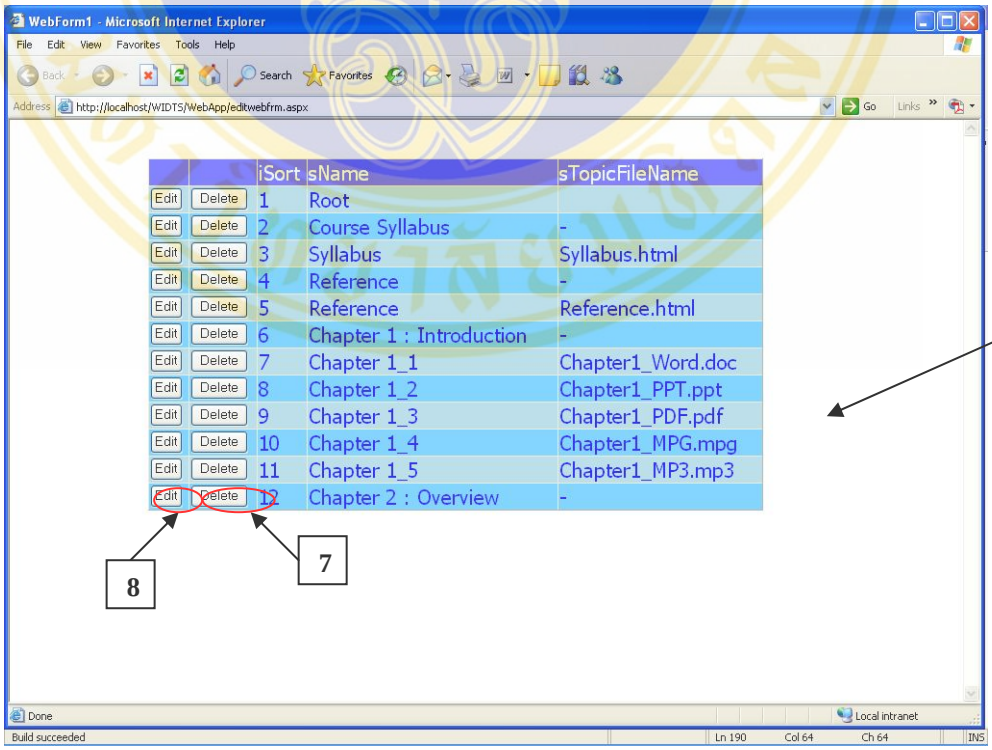


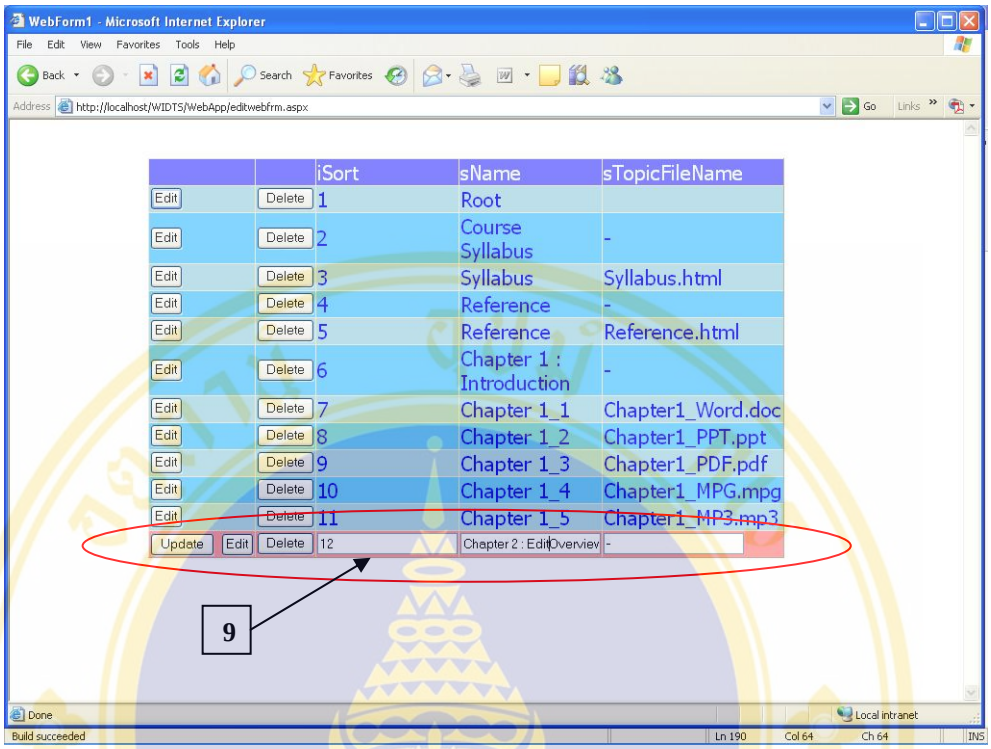
Generated website

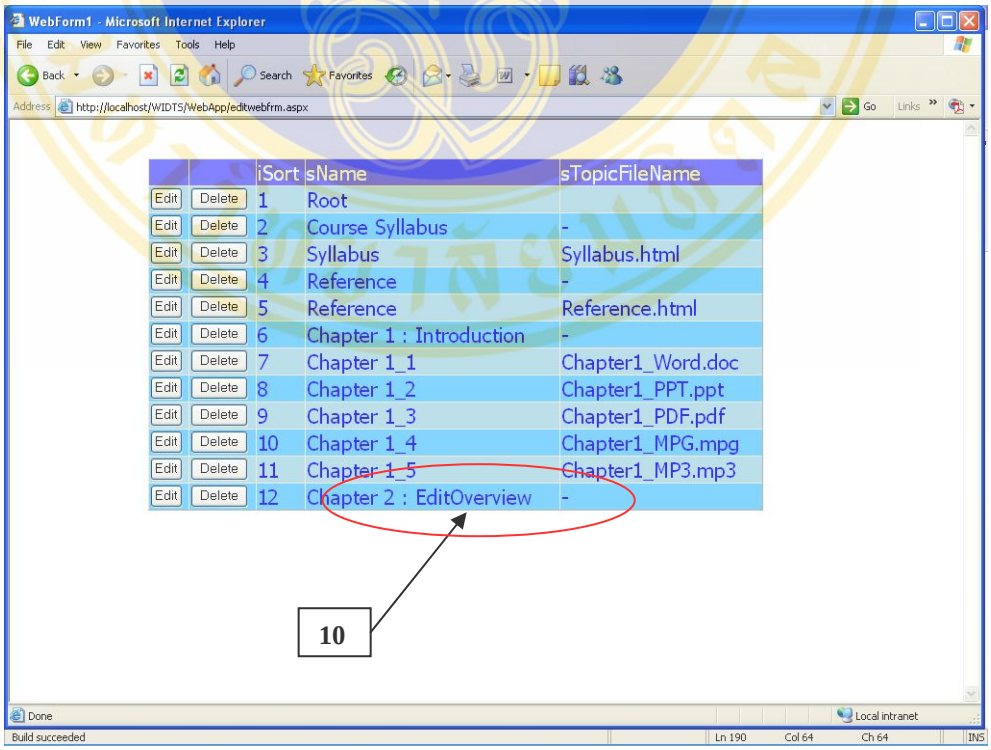
1. Website will display subject description , number of chapter , instructor , chapter and topic who can open , download , view in html format
2. Click **“Download”** button to open or download content file
3. Click **“Open”** button to open content file or “**Save”** button to download content file
4. Click **“View**” button to open file with html format
5. Click **“Edit Website”** button to edit website data
6. Screen display data who can edit or delete
7. Click **“Delete”** button to delete data
8. Click **“Edit”** button to edit data
9. When edit data successfully then click Update button and Edit button to end of edit
10. Output from edit data









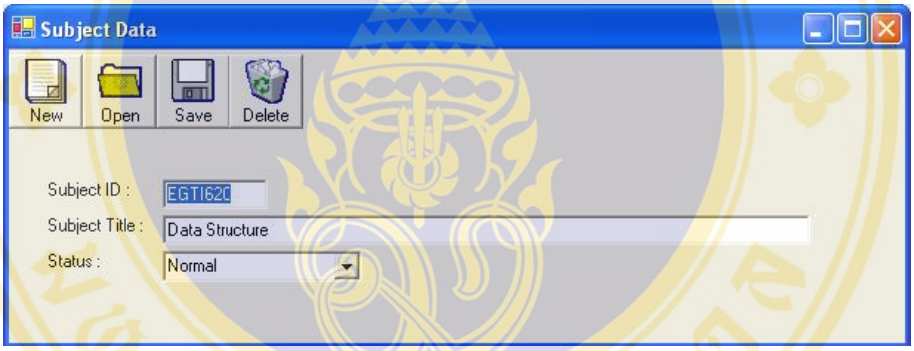


APPENDIX D
USER MANUAL (THAI VERSION)

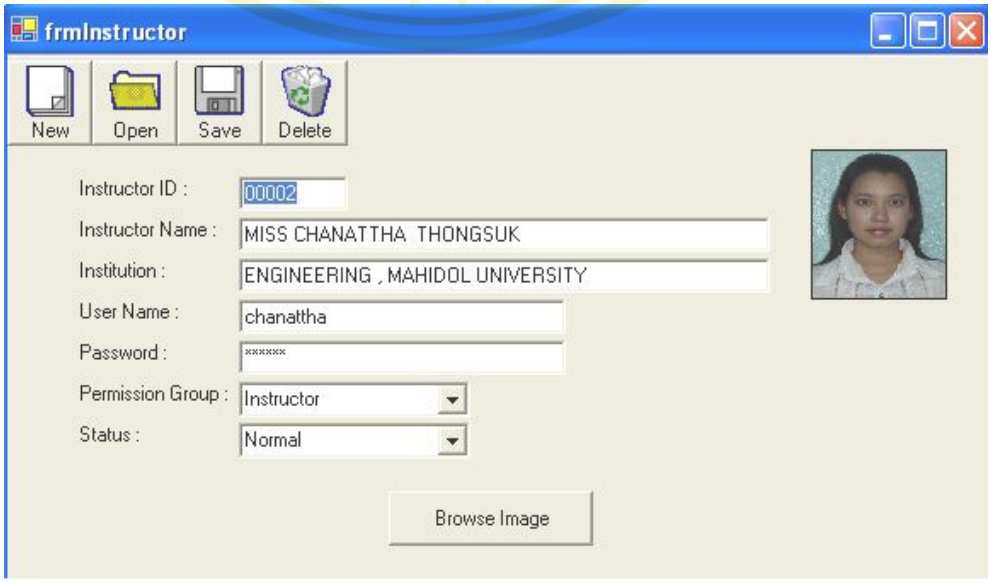
1. การเตรียมข้อมูลก่อนเริ่มใช้ระบบ

ผู้ดูแลระบบ (System Admin) จะเป็นผู้จัดเตรียมข้อมูลที่ระบบจำเป็นจะต้องเรียกใช้ โดยข้อมูลที่จำเป็นเหล่านี้ คือ

- ข้อมูลวิชา



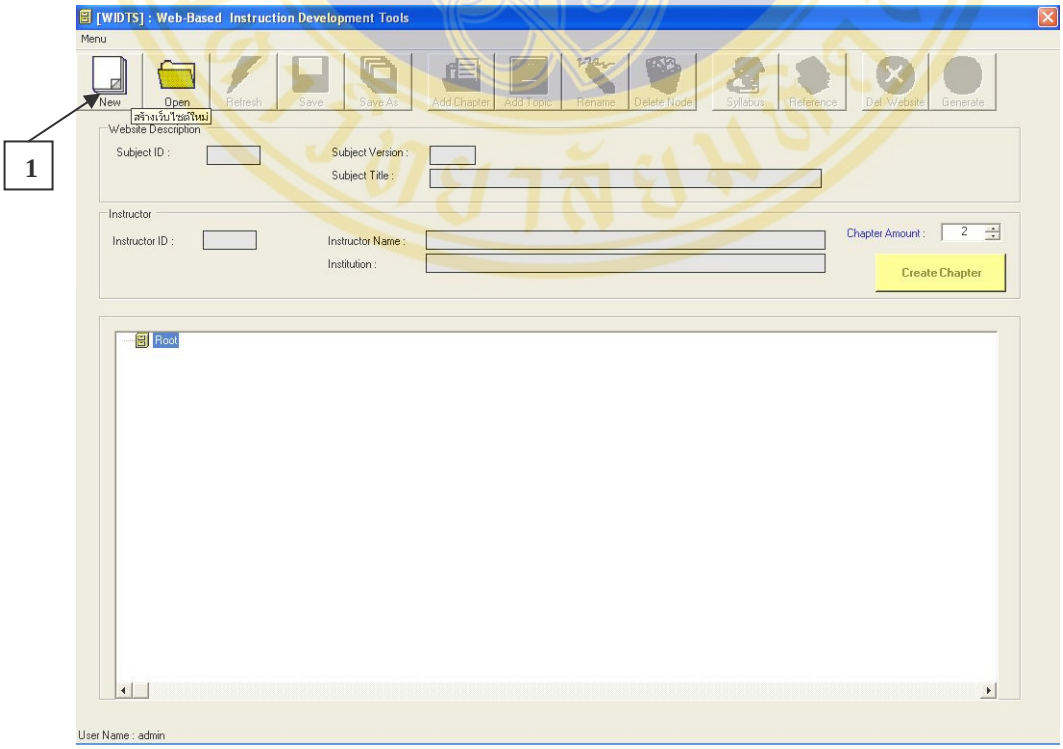
- ข้อมูลอาจารย์

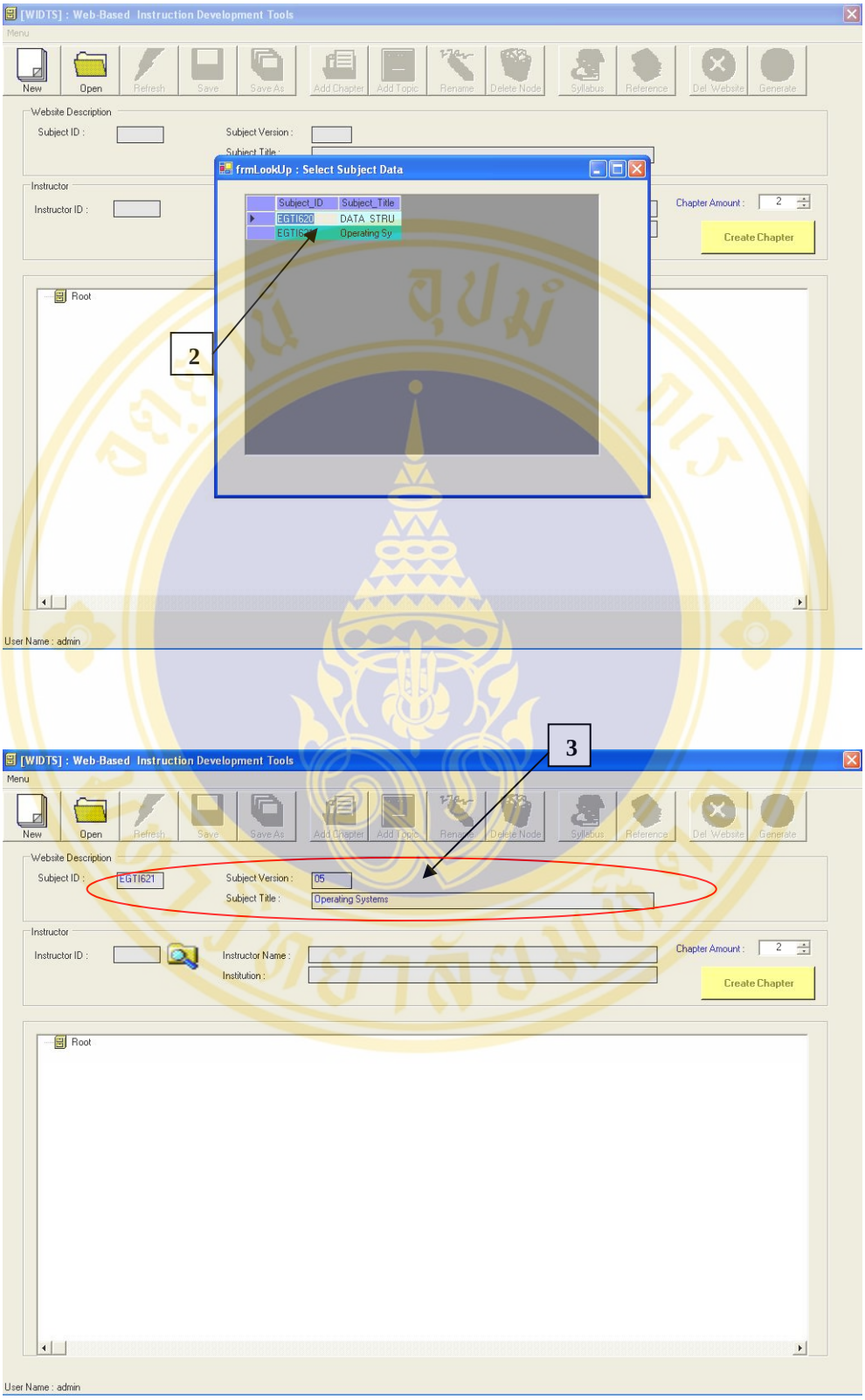


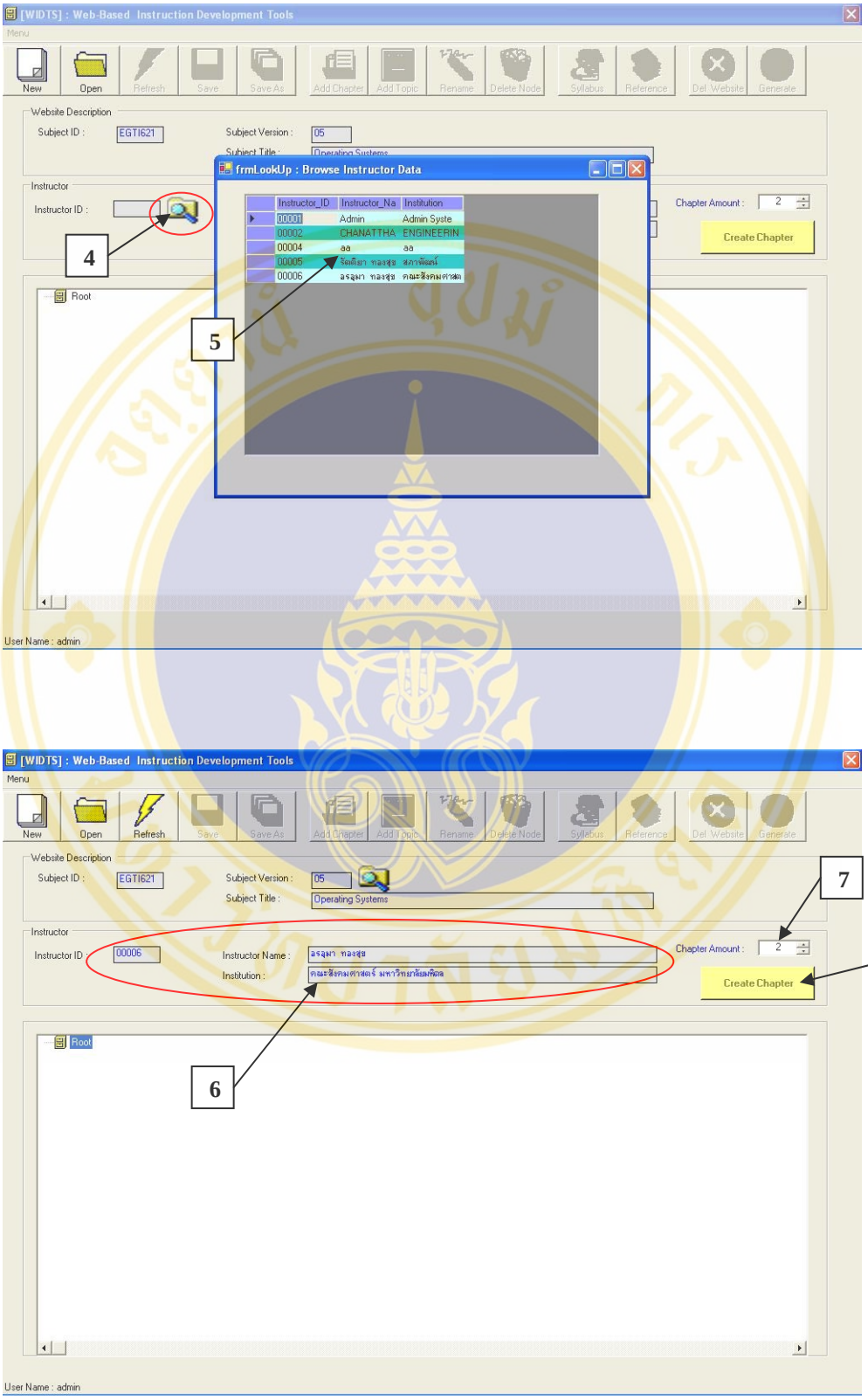
2. เริ่มต้นใช้งานระบบ

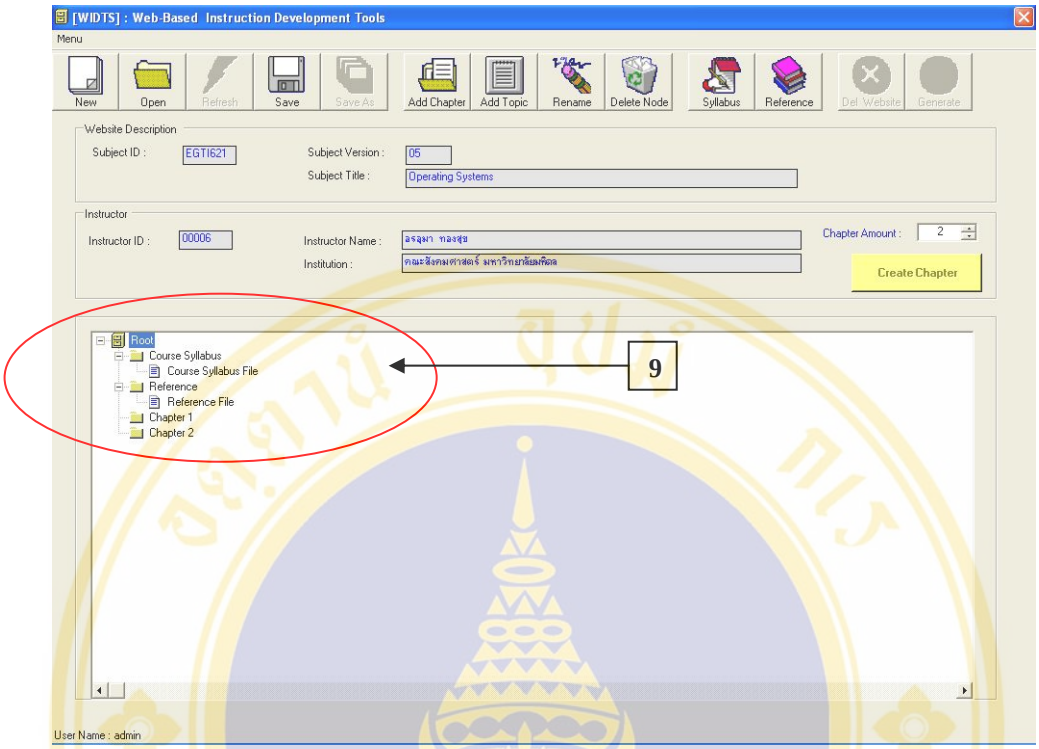
ขั้นตอนการทำงาน

1. กดปุ่ม **"New"** เพื่อเริ่มต้นสร้างเว็บไซต์ จากนั้นจะปรากฏตารางรายวิชาขึ้นมา
2. คลิกเลือกรายวิชาที่ต้องการ
3. รหัสวิชา , ชื่อวิชา และเวอร์ชั่นของรหัสวิชา (ระบบจะระบุเวอร์ชั่นให้โดยอัตโนมัติ) จะแสดงบนกรอบข้อความบนหน้าจอ
4. กดปุ่ม **"Browse"** เพื่อเลือกรหัสอาจารย์ จากนั้นจะปรากฏตารางรายชื่ออาจารย์ขึ้นมา
5. คลิกเลือกรายชื่ออาจารย์ที่ต้องการ
6. รหัสอาจารย์ , ชื่อ – นามสกุลของอาจารย์ และองค์กรจะแสดงบนกรอบข้อความบนหน้าจอ
7. กรอกจำนวนบทเรียนที่ต้องการ
8. กดปุ่ม **"Create Chapter"**
9. ระบบจะทำการสร้างบทเรียนตามจำนวนที่กรอก รวมทั้งสร้างรายละเอียดของวิชา (Course Syllabus) และเอกสารอ้างอิง (Reference) ให้โดยอัตโนมัติ









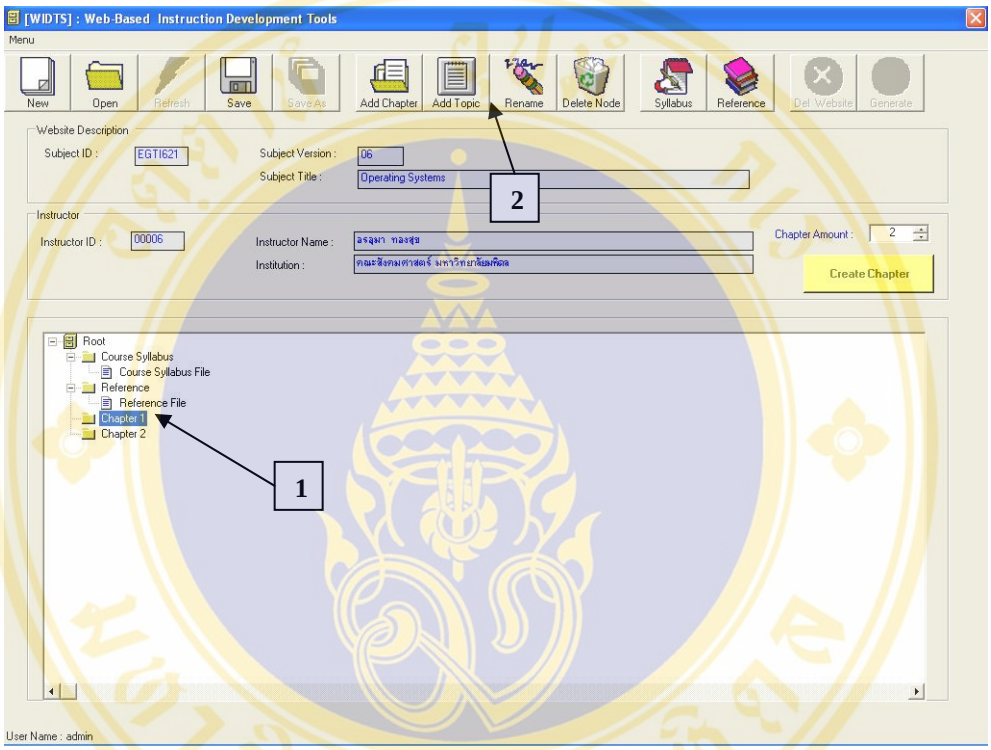
การเพิ่มหัวข้อในบทเรียน

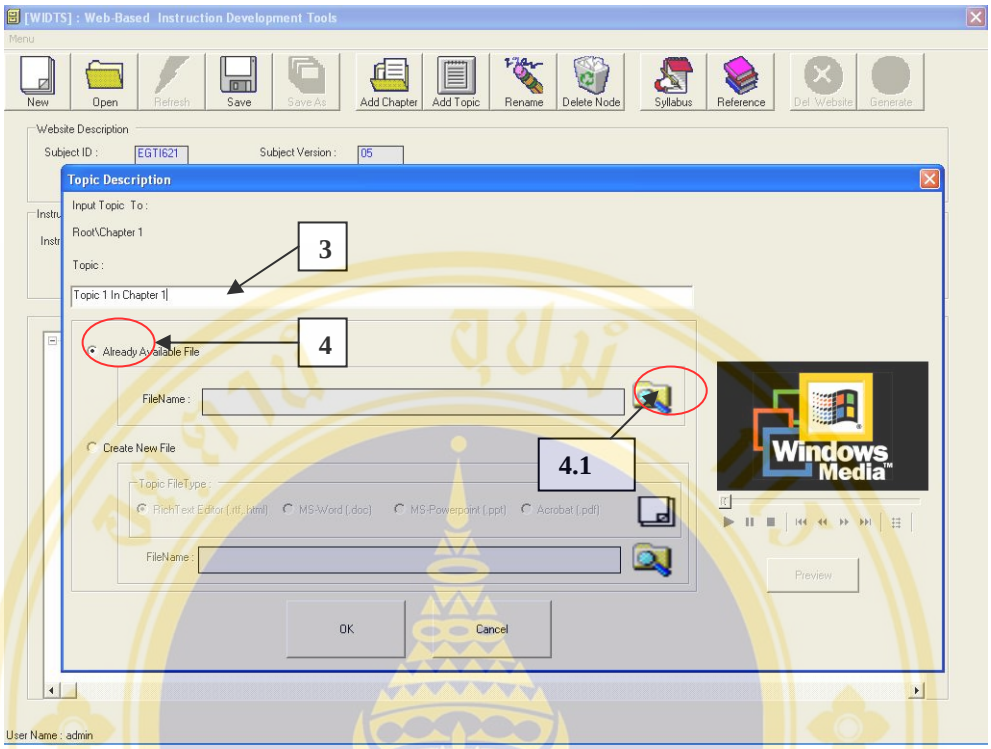
1. คลิกเลือก Chapter ที่ต้องการเพิ่มหัวข้อ
2. กดปุ่ม "**Add Topic**"
3. หน้าจอรับข้อมูลรายละเอียดของหัวข้อจะปรากฏขึ้น ให้กรอกรายละเอียดของหัวข้อ (Topic Description) ในช่อง Topic
4. คลิกเลือก **Already Available File** ในกรณีที่มีไฟล์ข้อมูลอยู่แล้ว
   4.1 กดปุ่ม **"browse"** เพื่อเลือกไฟล์ข้อมูลที่มีอยู่
   4.2 เลือกไฟล์ที่ต้องการแล้วกดปุ่ม **"Open"**
   4.3 ชื่อและที่อยู่ของไฟล์ (Path Address) จะแสดงในช่องของ FileName ให้โดยอัตโนมัติ
5. หรือคลิกเลือก **Create New File** ในกรณีที่ต้องการสร้างไฟล์ข้อมูลขึ้นมาใหม่
   5.1 คลิกเลือกประเภทของไฟล์ข้อมูลที่ต้องการสร้าง
   - คลิกเลือก Rich Text Editor เมื่อต้องการสร้างไฟล์ข้อมูลด้วย Rich Text Format (.rtf) หรือ Hypertext Markup Language (.html)

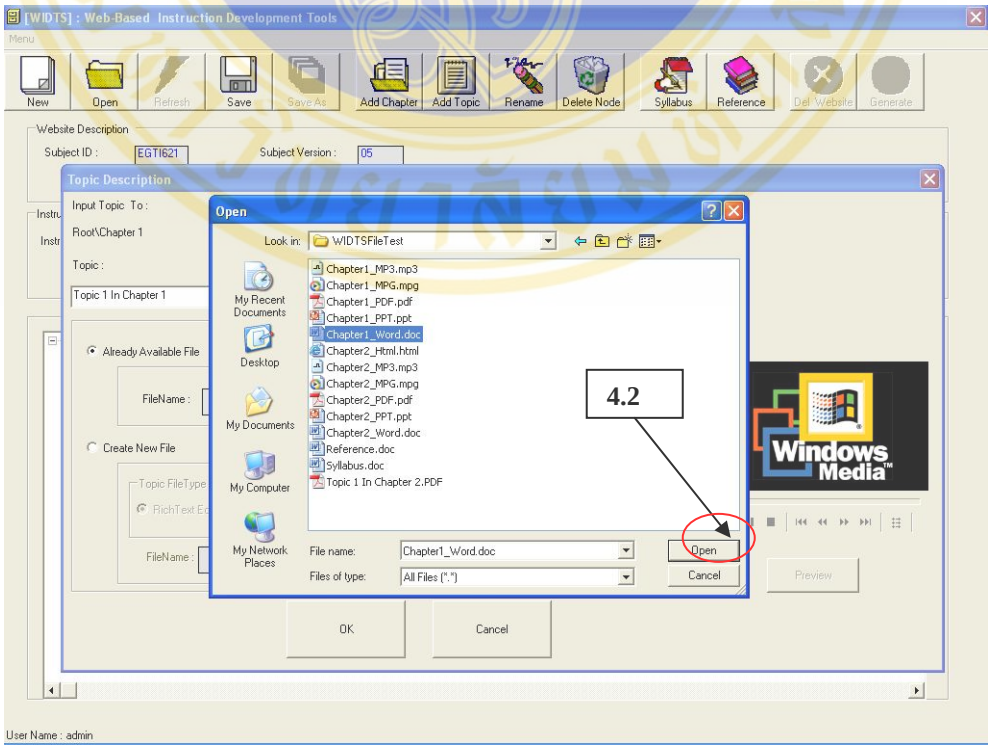
   (หมายเหตุ: ดูรายละเอียดการสร้างไฟล์ด้วย Rich Text Editor ได้ในหัวข้อ การสร้างไฟล์ด้วย Rich Text Editor)
   - คลิกเลือก MS – Word เมื่อต้องการสร้างไฟล์ข้อมูลด้วย Microsoft Word (.doc)
   - คลิกเลือก MS – PowerPoint เมื่อต้องการสร้างไฟล์ข้อมูลด้วย Microsoft PowerPoint (.ppt)
   - คลิก Acrobat Reader เมื่อต้องการสร้างไฟล์ข้อมูลด้วย Portable Document Format (.pdf)

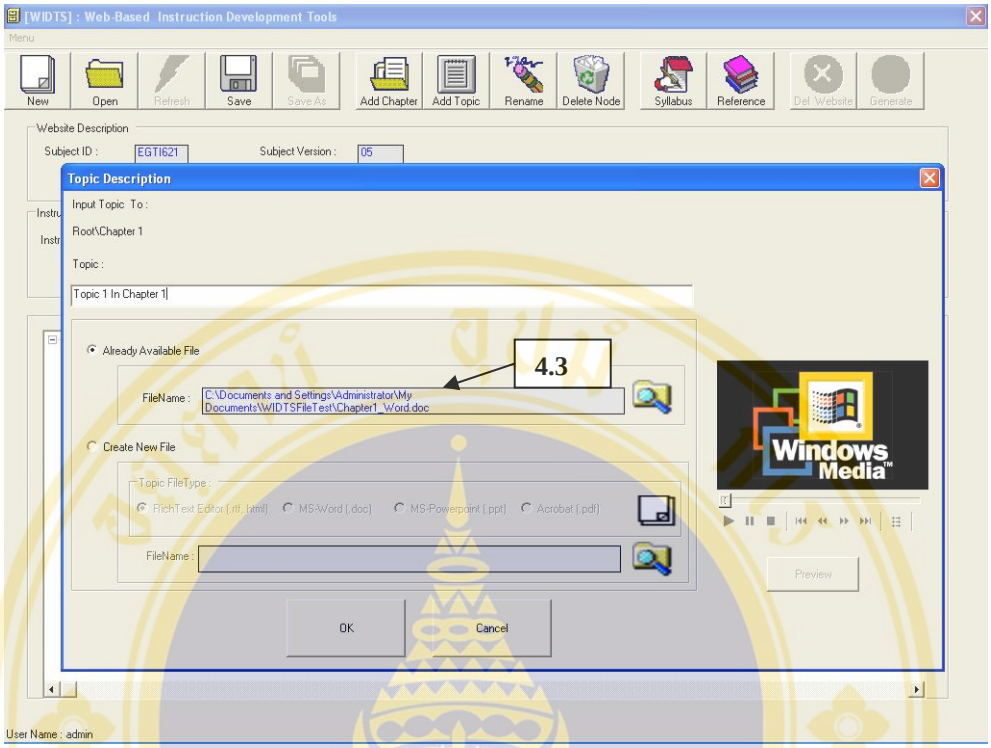
   5.2 กดปุ่ม **"New"** เพื่อเปิดโปรแกรมสร้างไฟล์ข้อมูลตามประเภทของไฟล์ที่เลือก
   5.3 เมื่อสร้างไฟล์ข้อมูลขึ้นมาใหม่เรียบร้อยแล้ว ให้กดปุ่ม **"Browse"** เพื่อเลือกไฟล์ข้อมูลที่สร้างขึ้นมาใหม่นั้น
   5.4 เลือกไฟล์ที่ต้องการแล้วกดปุ่ม **"Open"**
   5.5 ชื่อและที่อยู่ของไฟล์ (Path Address) จะแสดงในช่องของ FileName ให้โดยอัตโนมัติ
6. กดปุ่ม **"OK"** เพื่อสิ้นสุดการกรอกรายละเอียดในหน้าจอนี้
7. ผลที่ได้จากการเพิ่มหัวข้อตามขั้นตอนด้านบน

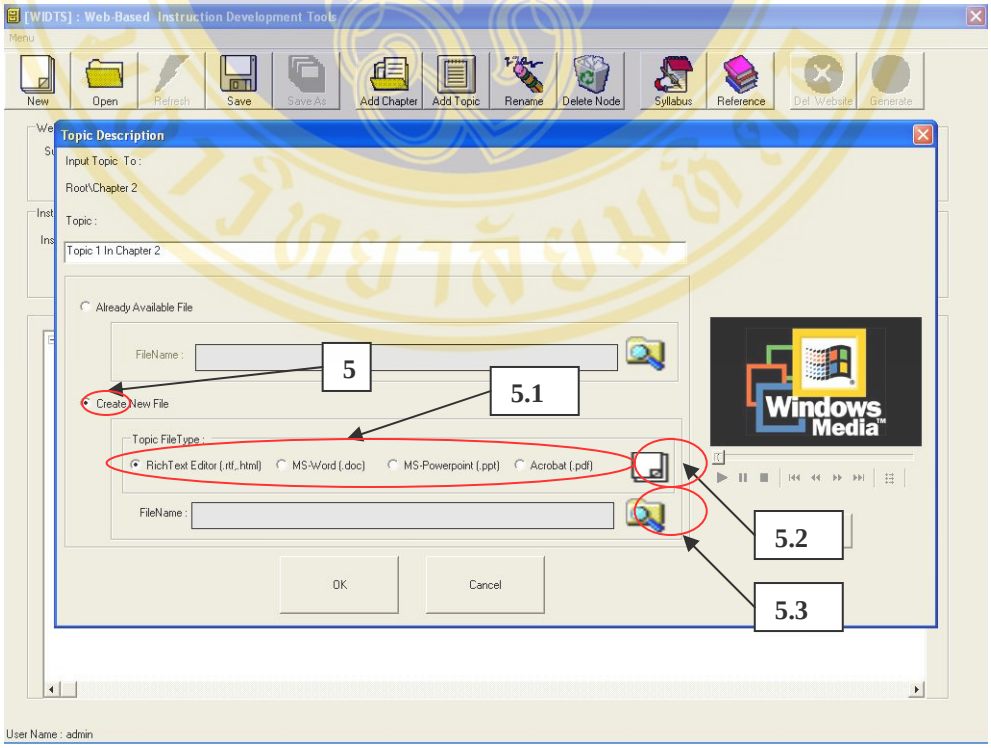
8. ผลลัพธ์ที่ได้จากการเพิ่มหัวข้ออื่น ๆ ซึ่งจะมี Icon สัญลักษณ์ของประเภทไฟล์นั้น ๆ แสดงขึ้นมา (หมายเหตุ: ระบบรองรับการแสดงสัญลักษณ์ของประเภทไฟล์เพียง 5 ประเภทเท่านั้น คือ .doc , .ppt , .pdf , .mpg และ .mp3)

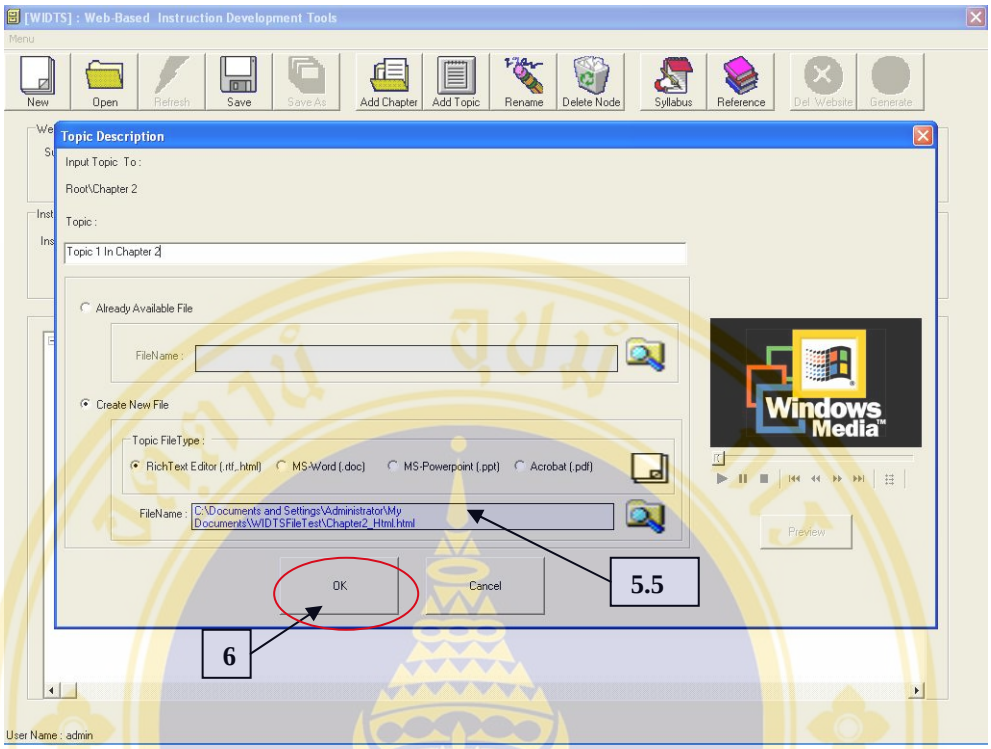


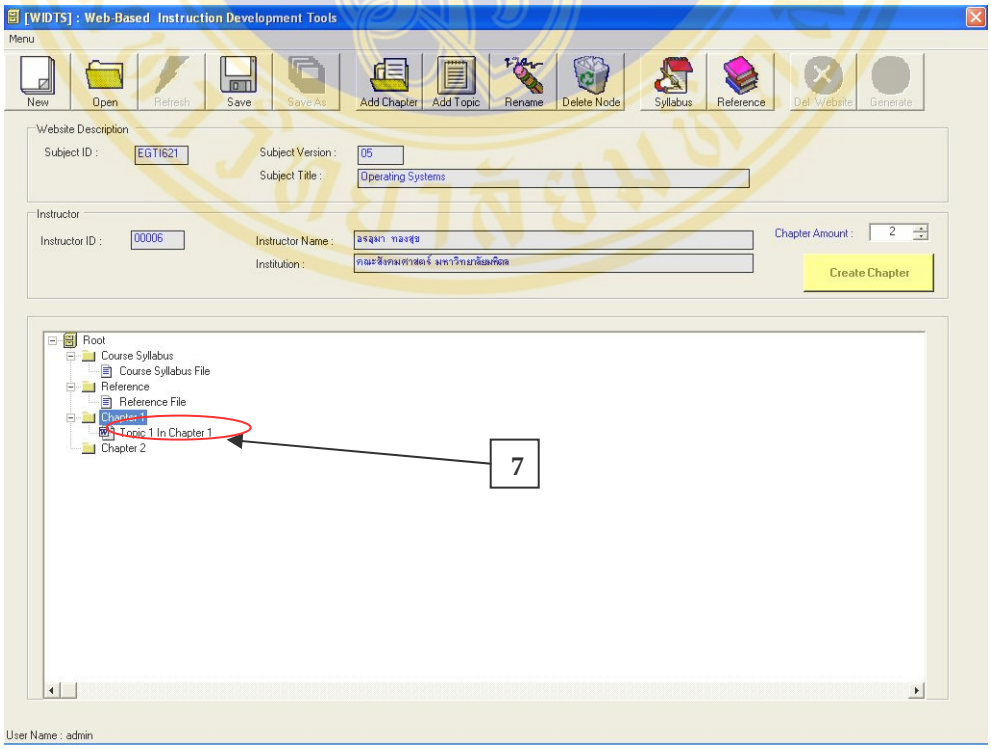


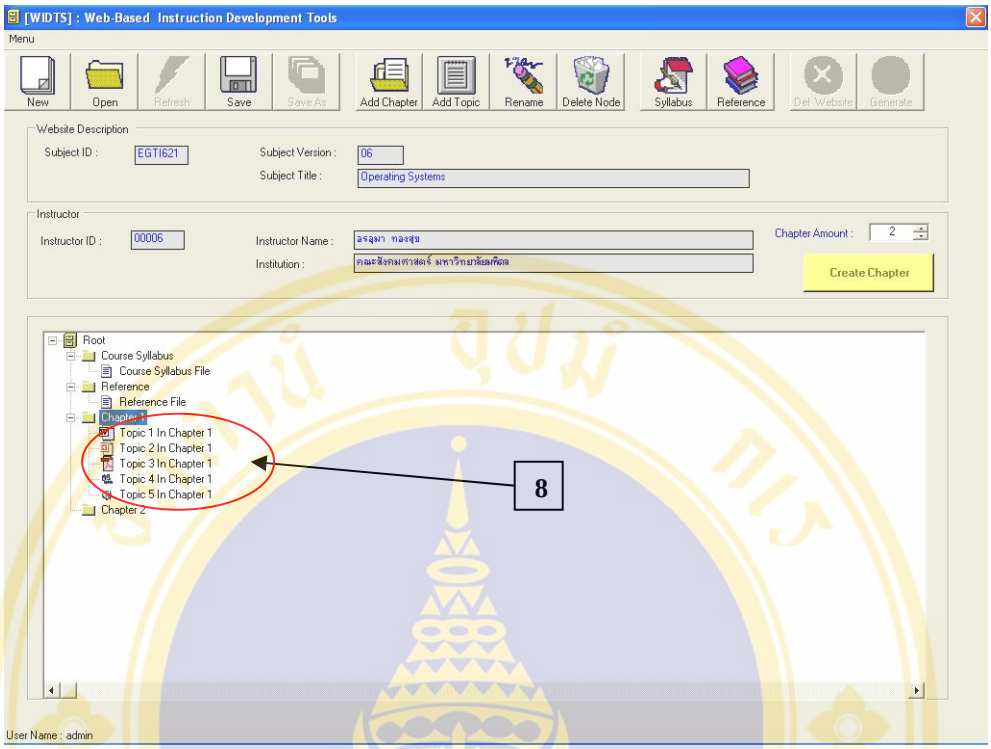




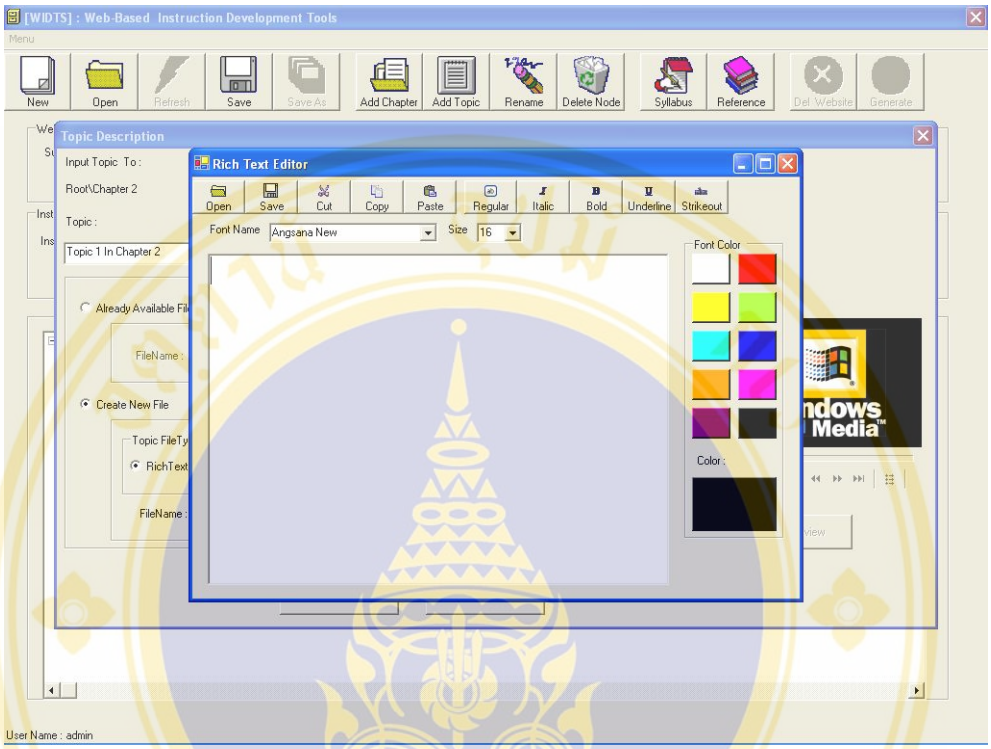




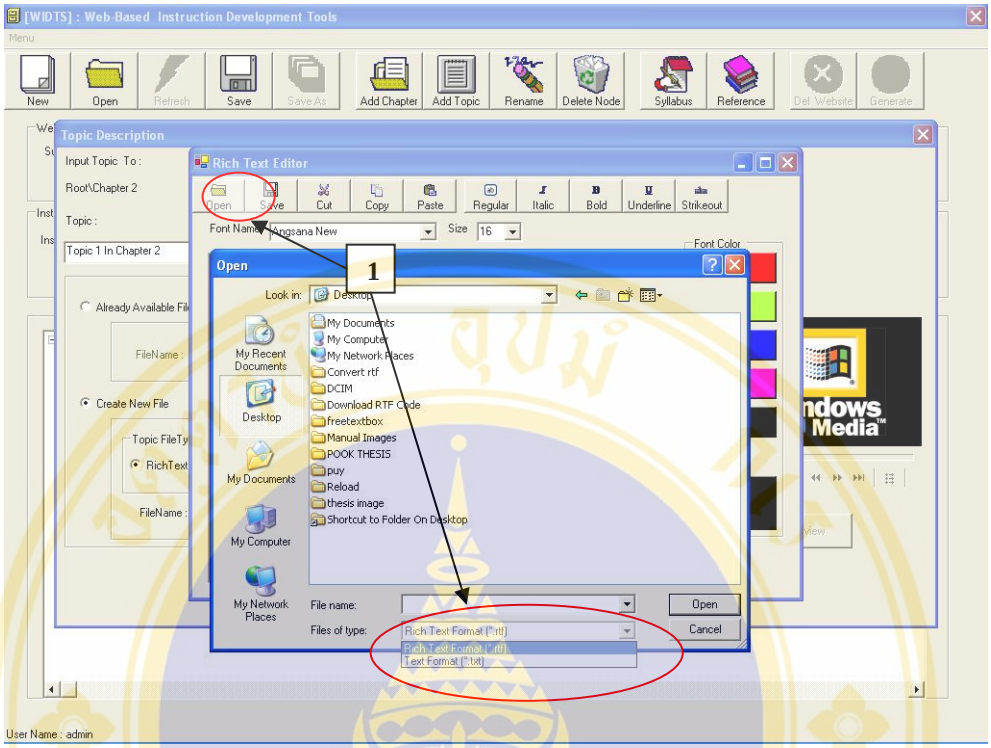


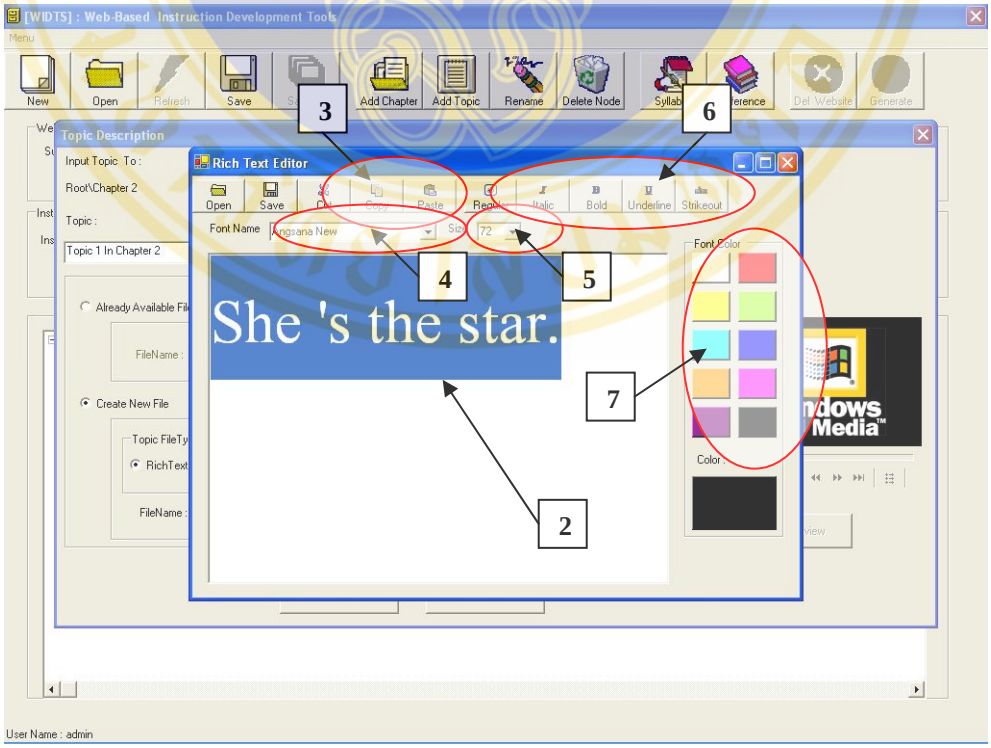


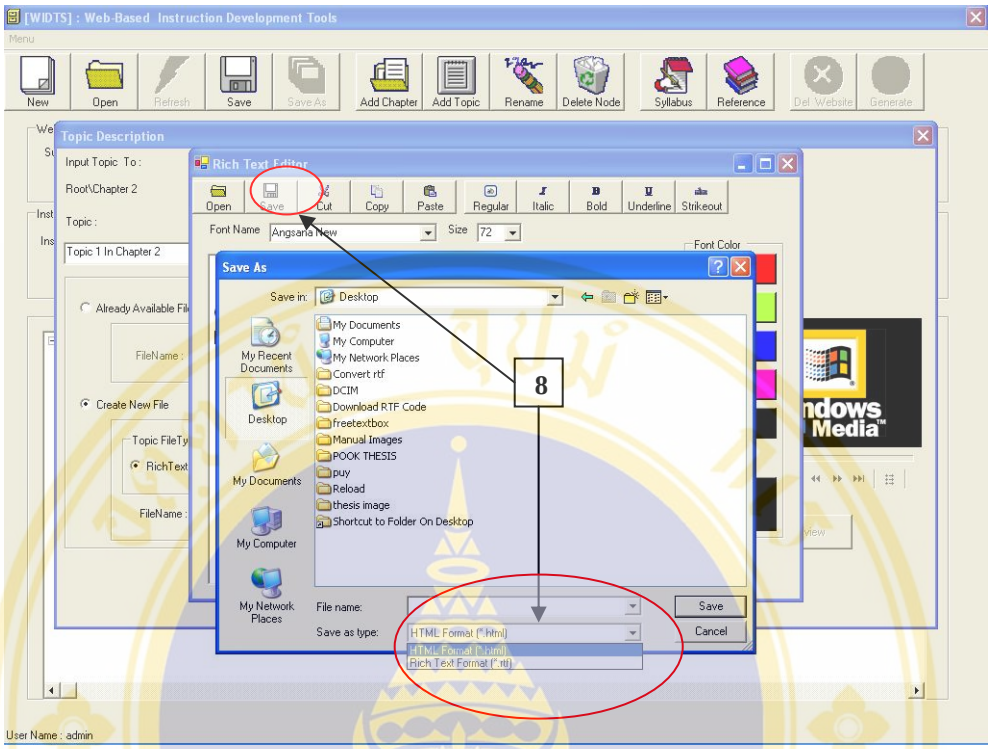
การสร้างไฟล์ด้วย Rich Text Editor



1. กดปุ่ม **“Open”** เพื่อเปิดไฟล์ .txt และ .rtf ขึ้นมาแก้ไขได้
2. พิมพ์ข้อมูลที่ต้องการลงไปในส่วนของกรอบข้อความ และหากต้องการกำหนดคุณสมบัติของ
   ตัวอักษรให้ทำการแรเงาข้อความส่วนที่ต้องการ
3. เลือกจัดการกับข้อความ เช่น การตัดข้อความ , การคัดลอกข้อความ และการวางข้อความ
4. เลือกประเภทของตัวอักษร เช่น Times New Roman
5. เลือกขนาดของตัวอักษร
6. เลือกลักษณะของตัวอักษร เช่น ปกติ , เอียง , หนา , ขีดเส้นใต้ตัวอักษร , ขีดกลางตัวอักษร
7. เลือกสีของตัวอักษร
8. กดปุ่ม **“Save”** เมื่อต้องการทำการบันทึก ซึ่งสามารถเลือกบันทึกได้ 2 ประเภท คือ Rich Text Format (.rtf) และ Hypertext Markup Language (HTML)

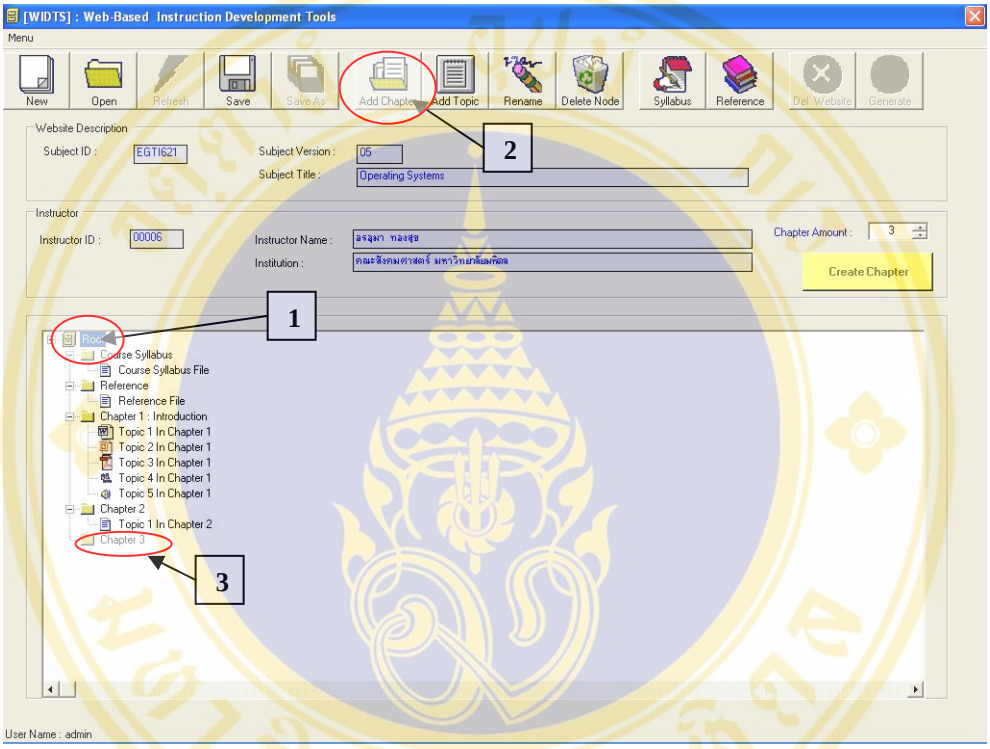






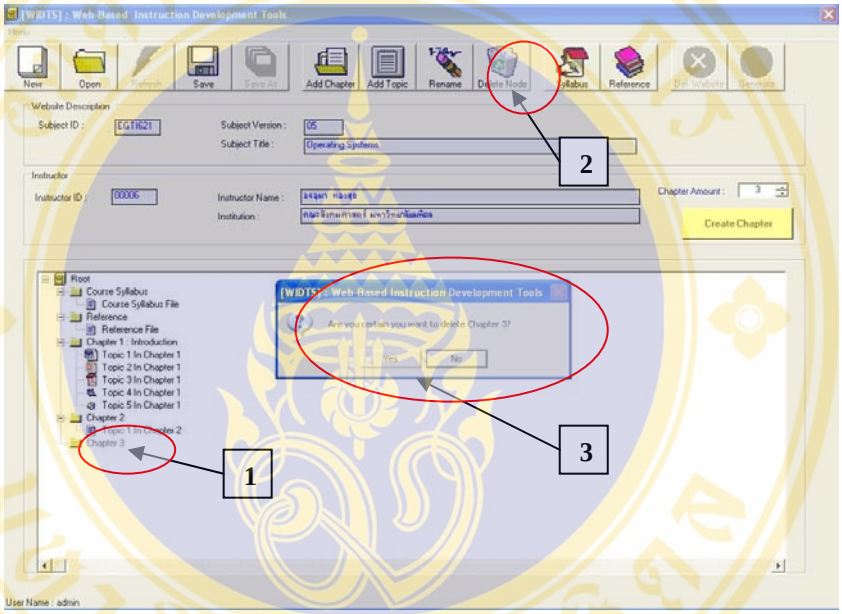
การเพิ่มบทเรียน

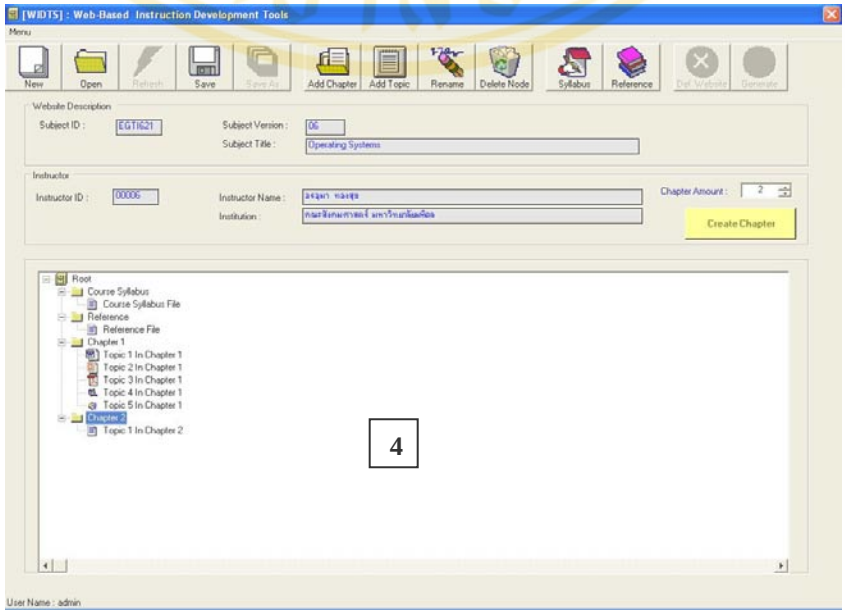
1. คลิกที่ **Root**
2. กดปุ่ม **“Add Chapter”**
3. ผลลัพธ์ที่ได้จากการเพิ่มบทเรียน



การลบบทเรียนหรือหัวข้อ

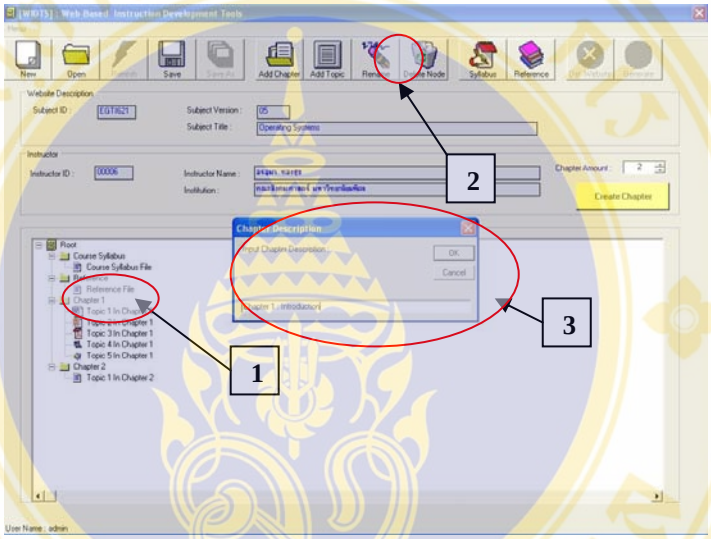
1. คลิกเลือกบทเรียนหรือหัวข้อที่ต้องการลบ
2. กดปุ่ม **“Delete Node”**
3. จะปรากฏข้อความว่าต้องการที่จะลบบทเรียนหรือหัวข้อนั้นจริงหรือไม่ ถ้ายืนยันว่าต้องการลบให้กดปุ่ม **“Yes”** แต่ถ้าไม่ต้องการลบให้กดปุ่ม **“No”**
4. ผลลัพธ์ที่ได้จากการลบบทเรียนหรือหัวข้อที่ต้องการ

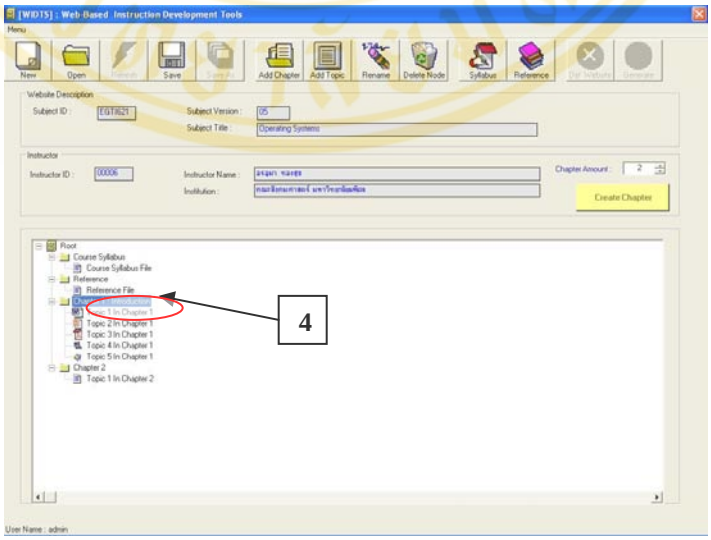




การแก้ไขชื่อบทเรียนหรือชื่อหัวข้อ

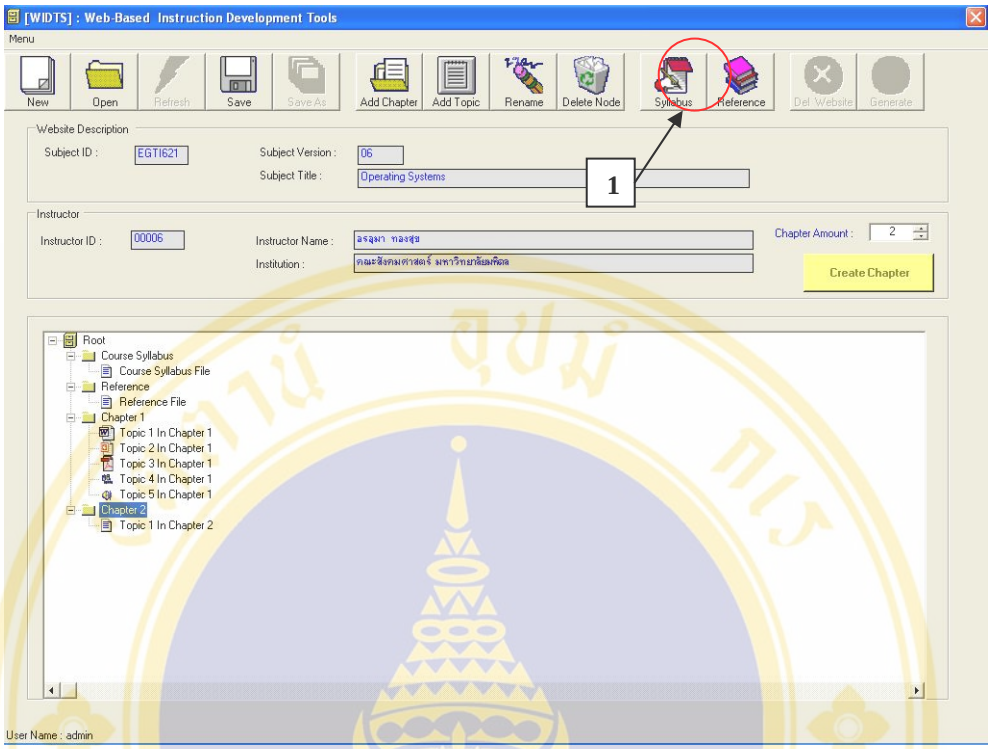
1. คลิกเลือกบทเรียนหรือหัวข้อที่ต้องการแก้ไขชื่อ
2. กดปุ่ม **“Rename”**
3. จะปรากฏกรอบและช่องให้ใส่ Input Chapter / Topic Description ให้แก้ไขชื่อบทเรียนหรือชื่อหัวข้อตามที่ต้องการ แล้วกดปุ่ม **“OK”**
4. ผลลัพธ์ที่ได้จากการแก้ไขชื่อบทเรียนหรือชื่อหัวข้อ

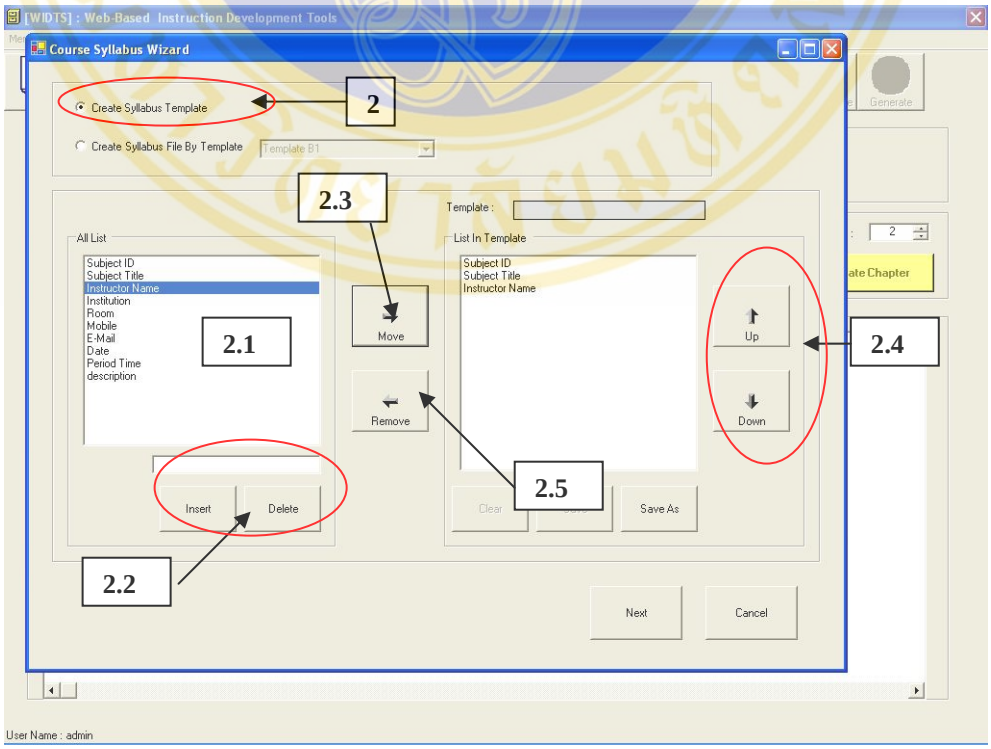


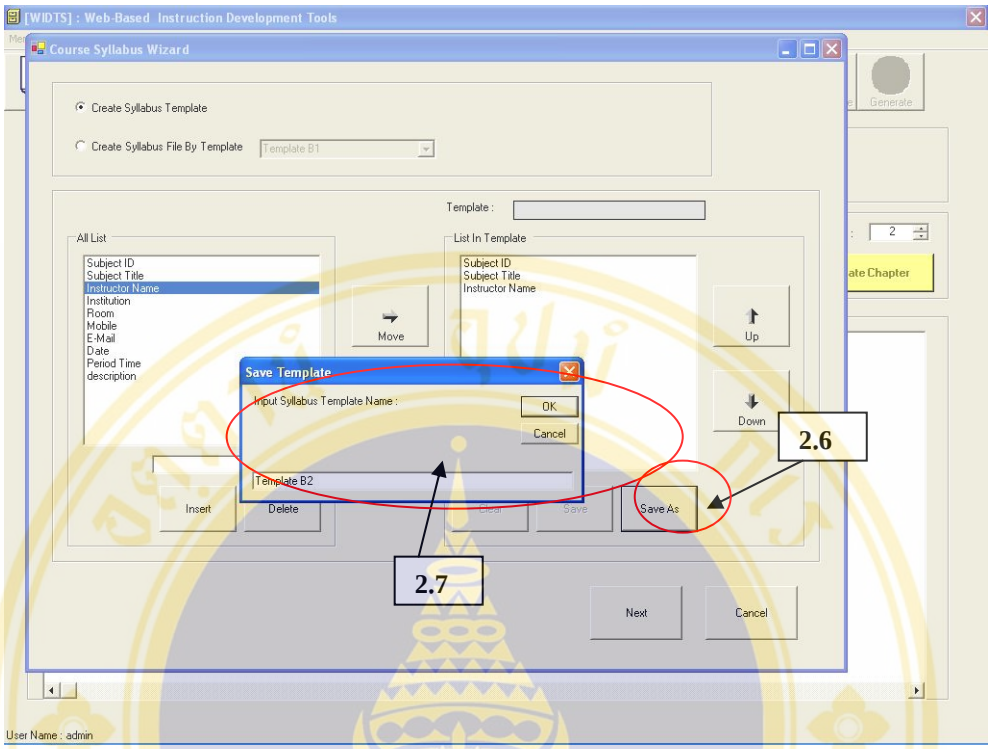


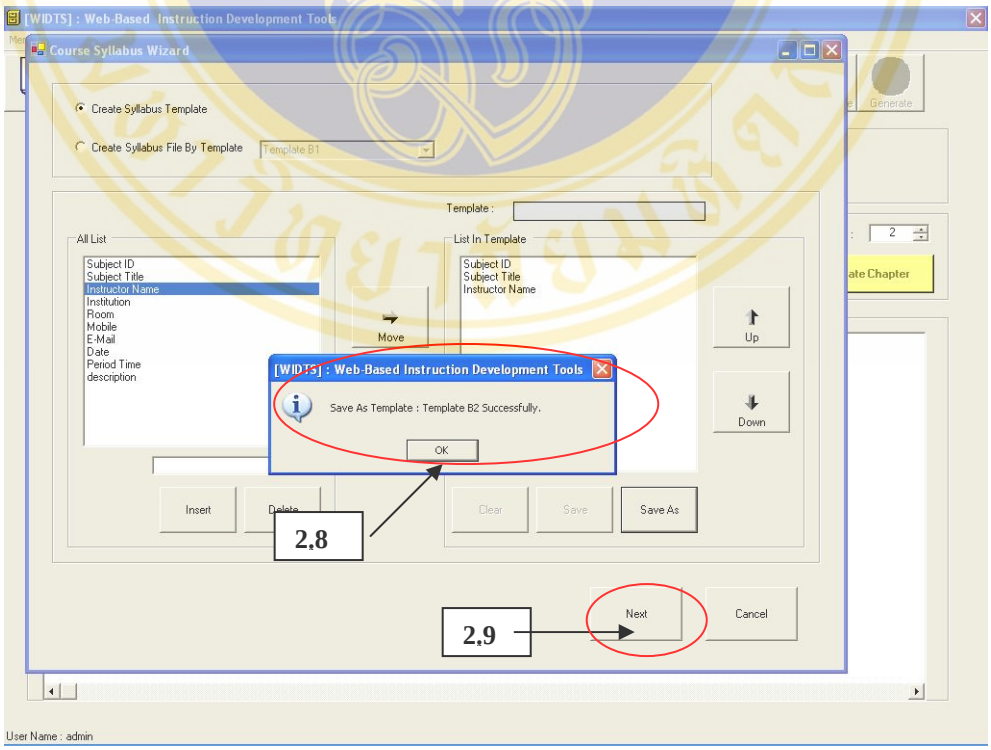
การสร้าง Course Syllabus File

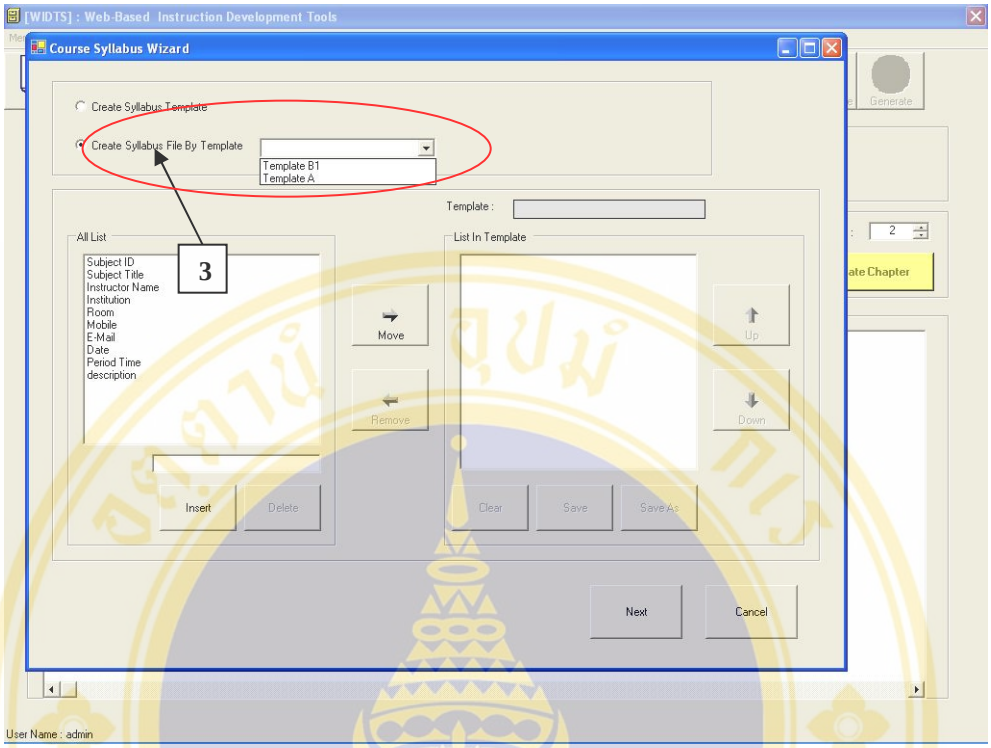
1. กดปุ่ม **"Syllabus"**
2. คลิกเลือก **Create Syllabus Template**
   - 2.1 ในส่วนของ All Topic คือหัวข้อทั้งหมดของ Syllabus
   - 2.2 ทำการเพิ่มหรือลบหัวข้อใน All Topic เช่น หากต้องการเพิ่มหัวข้อ ให้ทำการกรอกข้อความในช่องว่าง แล้วกดปุ่ม **"Insert"** หรือหากต้องการลบหัวข้อ ให้ทำการคลิกเลือกหัวข้อที่ต้องการลบแล้วกดปุ่ม **"Delete"**
   - 2.3 คลิกเลือกหัวข้อที่ต้องการ โดยการกดปุ่ม **"Move"** จากนั้นหัวข้อที่ต้องการจะถูกเลือกไปยัง List in Template
   - 2.4 กดปุ่ม **"Up"** หรือ **"Down"** เพื่อเลื่อนลำดับของหัวข้อใน List in Template
   - 2.5 หากต้องการลบหัวข้อใน List in template ให้กดปุ่ม **"Remove"**
   - 2.6 หากต้องการ Save Template นี้ ให้กดปุ่ม **"Save As"**
   - 2.7 ใส่ชื่อ Template ที่ต้องการ แล้วกดปุ่ม **"OK"**
   - 2.8 จะปรากฏข้อความแสดงการบันทึก Template เสร็จเรียบร้อยแล้ว
   - 2.9 กดปุ่ม **"Next"** เพื่อทำการขั้นตอนต่อไป
3. หรือ คลิกเลือก **Create Syllabus File by Template**
   - 3.1 คลิกเลือก Template ที่ต้องการ (ใช้ได้เฉพาะ Template กลางและ Template ที่เป็นของตนเองเท่านั้น)
   - 3.2 สามารถจัดการเพิ่มเติม , แก้ไข หัวข้อใน Template ได้
   - 3.3 กดปุ่ม **"Next"** เพื่อทำการขั้นตอนต่อไป
4. จะปรากฏหน้าจอขึ้นมารับค่าตามหัวข้อที่ต้องการแสดงใน Syllabus ให้กรอกข้อมูลลงไปในช่องรับข้อความต่าง ๆ
5. กดปุ่ม **"Next"**
6. จะปรากฏหน้าจอ Schedule ขึ้นมาให้ทำการคลิกเลือกวันที่ต้องการได้ในปฏิทิน จากนั้นวันที่เลือกจะแสดงอยู่ด้านล่างของปฏิทินด้วย
7. กรอกข้อความอธิบายรายละเอียดการสอนลงไปในช่อง Description
8. กดปุ่ม **"Next"** เพื่อกรอกข้อมูลในตารางวันอื่น ๆ
9. กดปุ่ม **"Finish"** เมื่อกรอกข้อมูลในตารางวันสุดท้าย เพื่อสิ้นสุดการกรอกข้อมูล

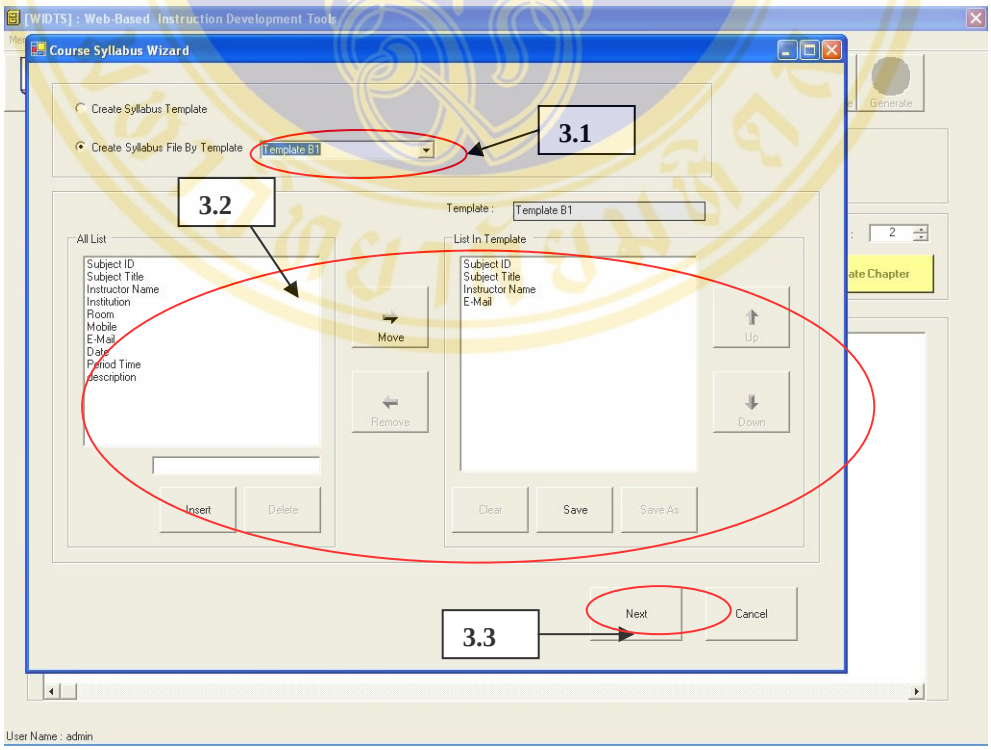


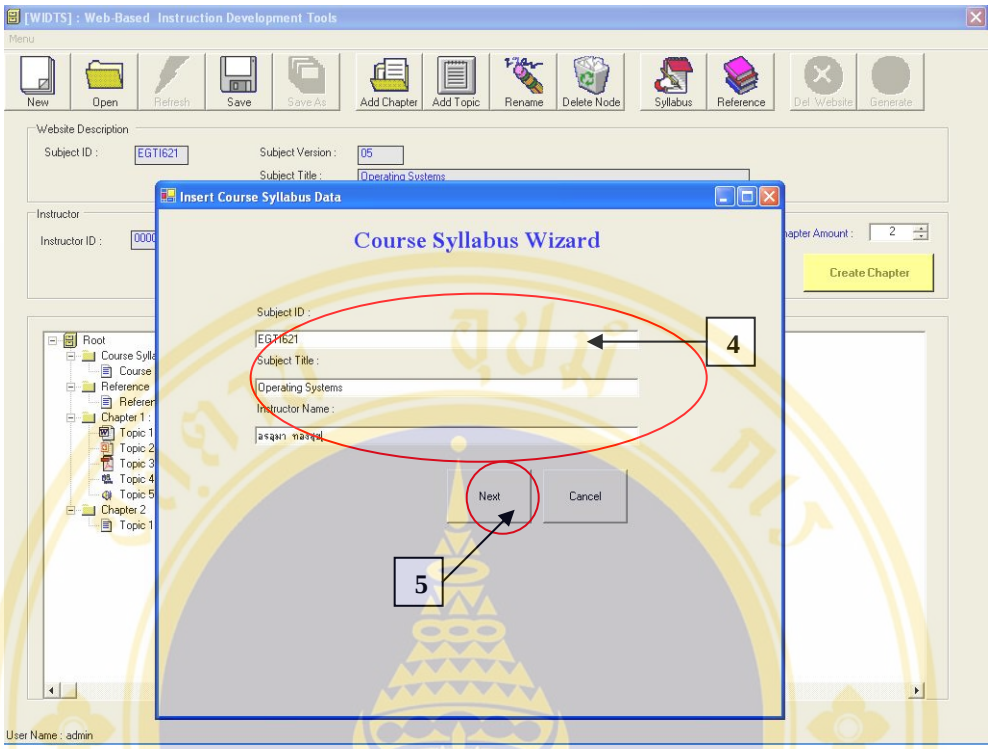


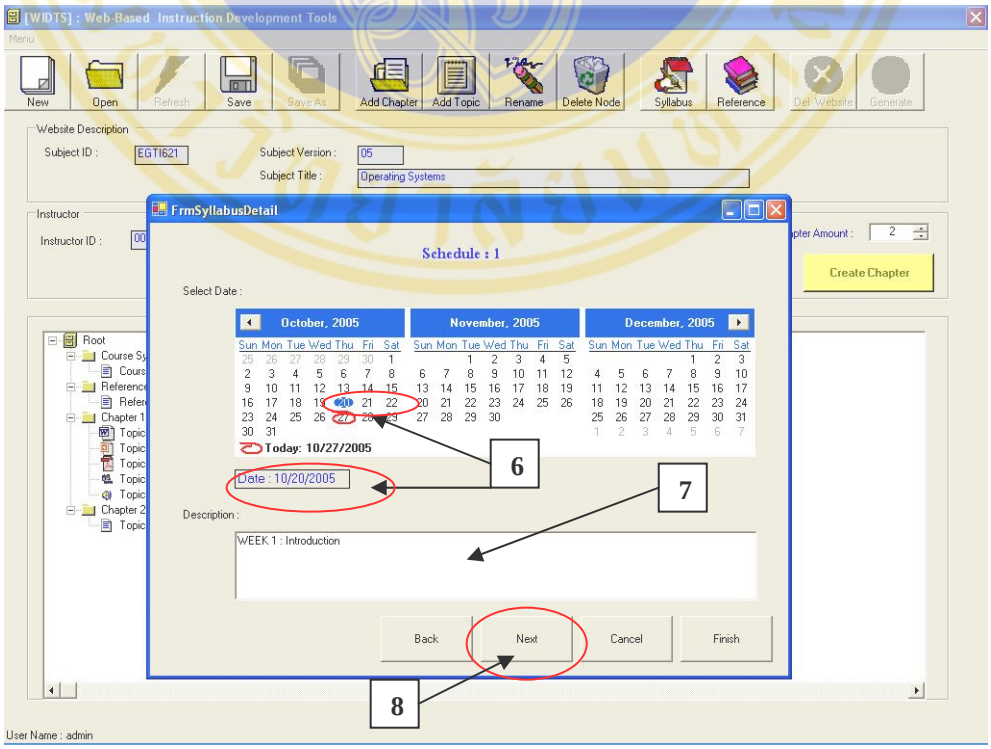


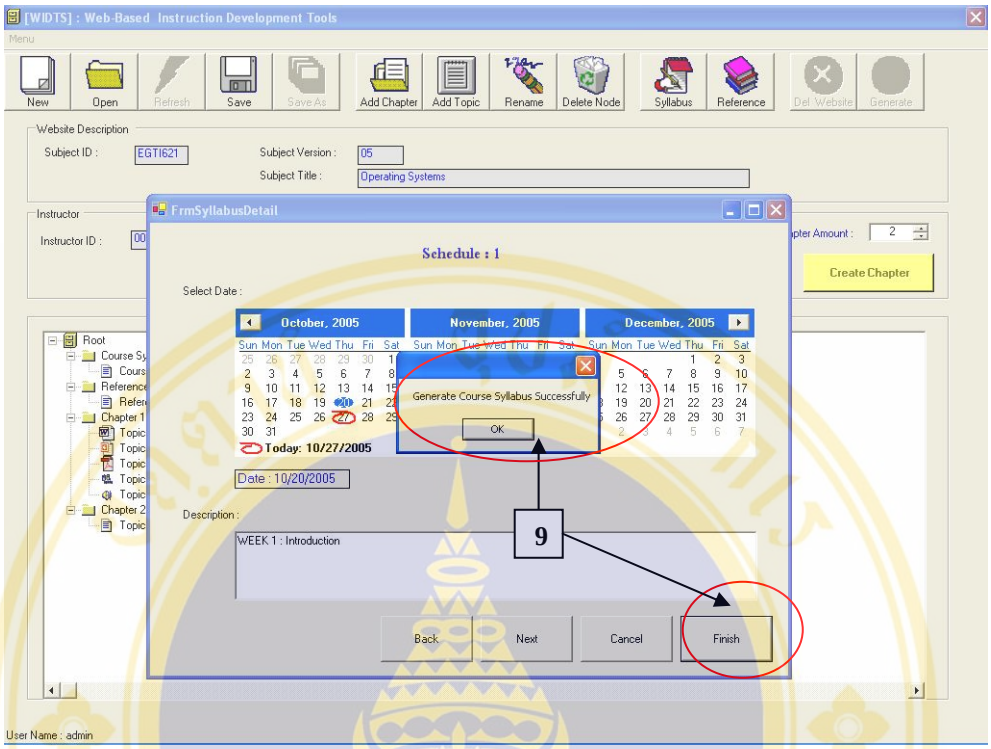






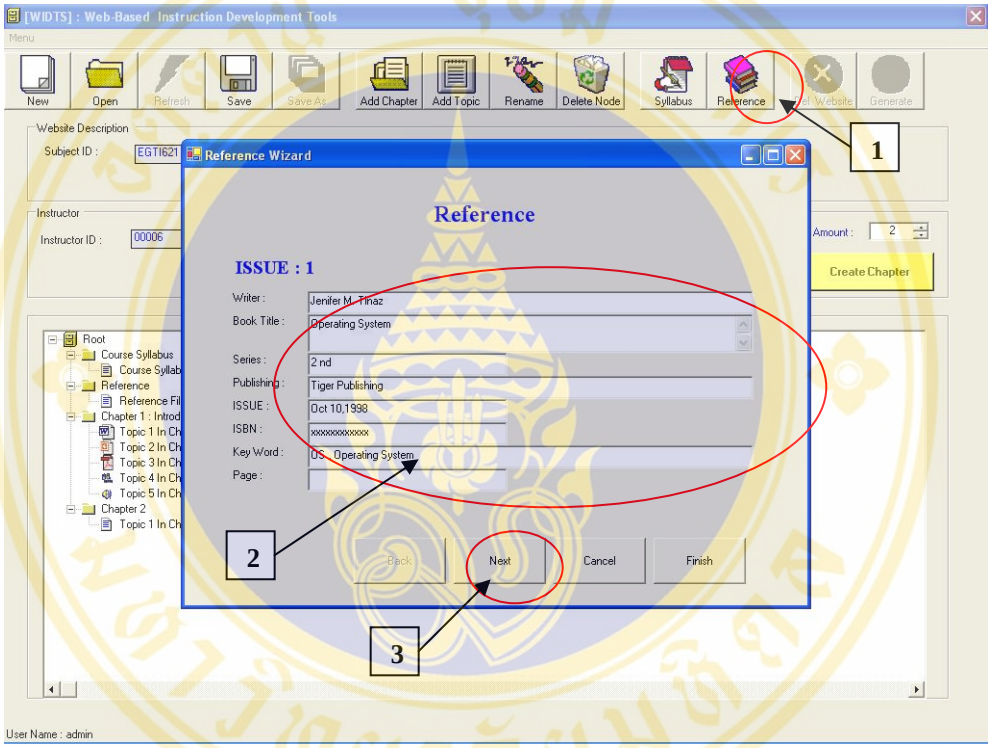


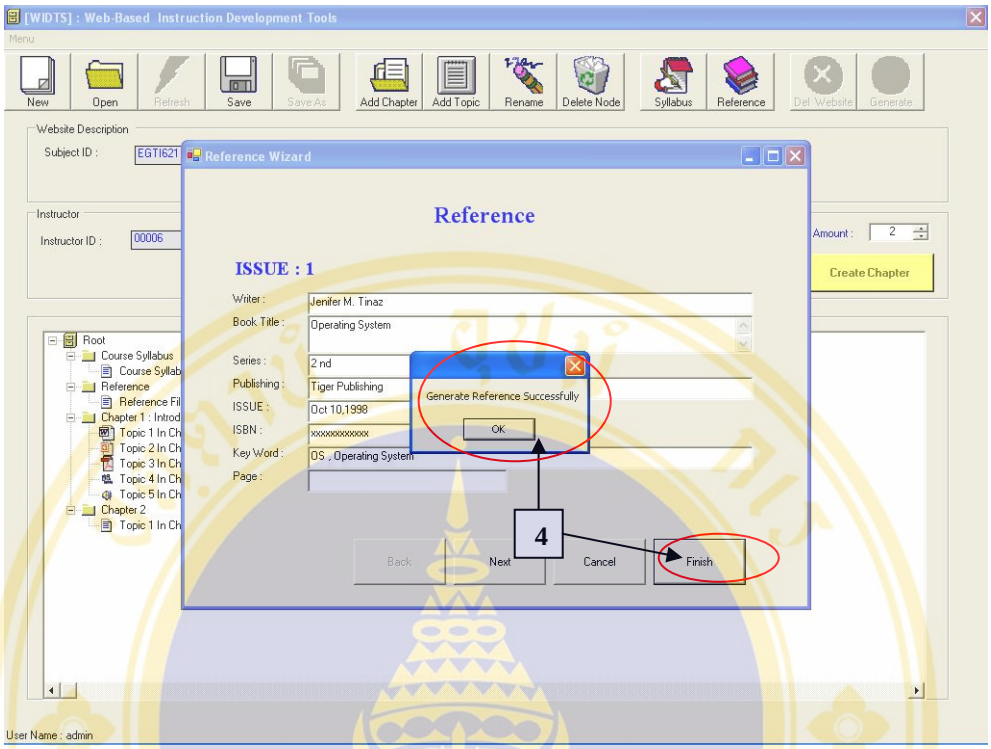




การสร้าง Reference File

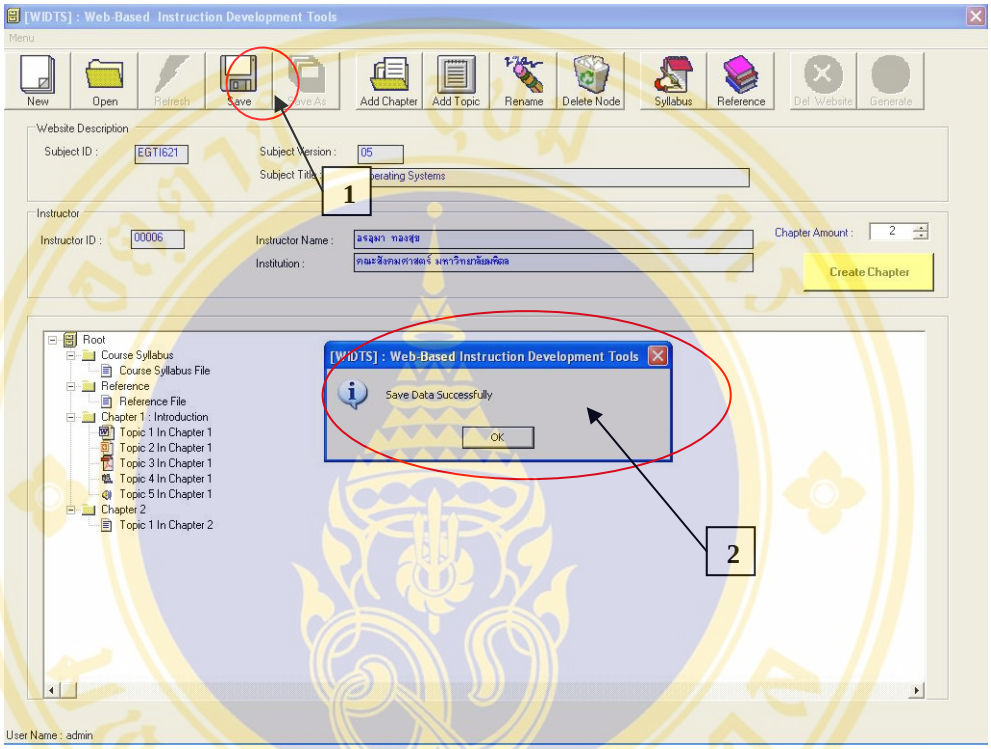
1. กดปุ่ม **“Reference”**
2. จะปรากฏหน้าจอให้กรอกข้อมูลที่ reference ต้องการ
3. กดปุ่ม **“Next”** เพื่อกรอกข้อมูลชุดต่อไป
4. กดปุ่ม **“Finish”** เพื่อสิ้นสุดการกรอกข้อมูล





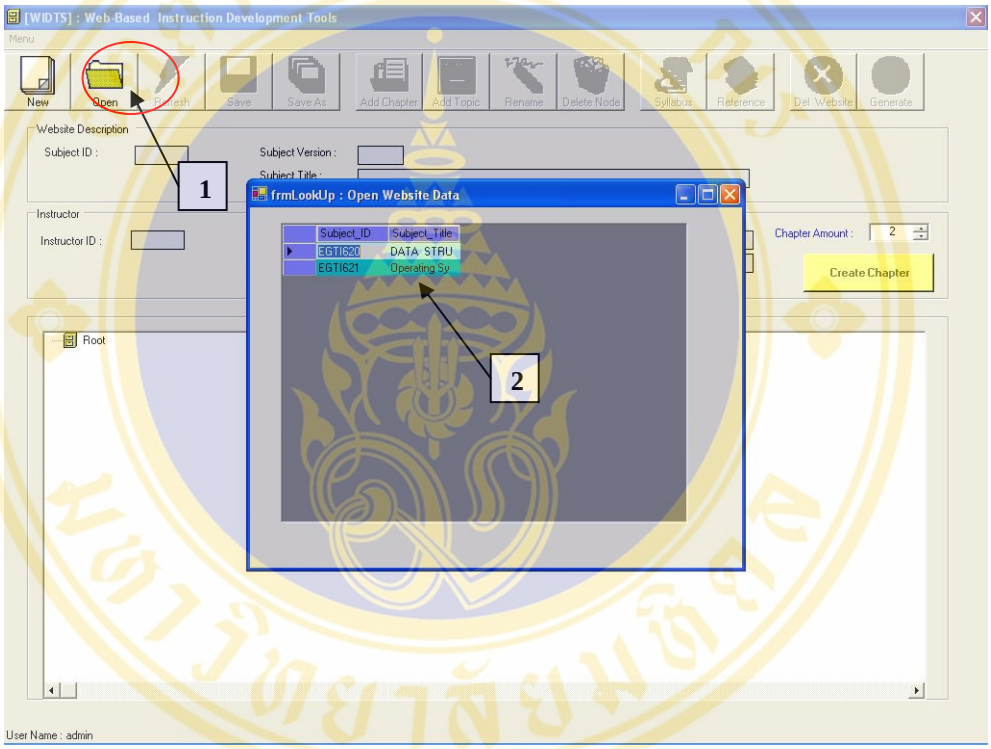
การบันทึกข้อมูล

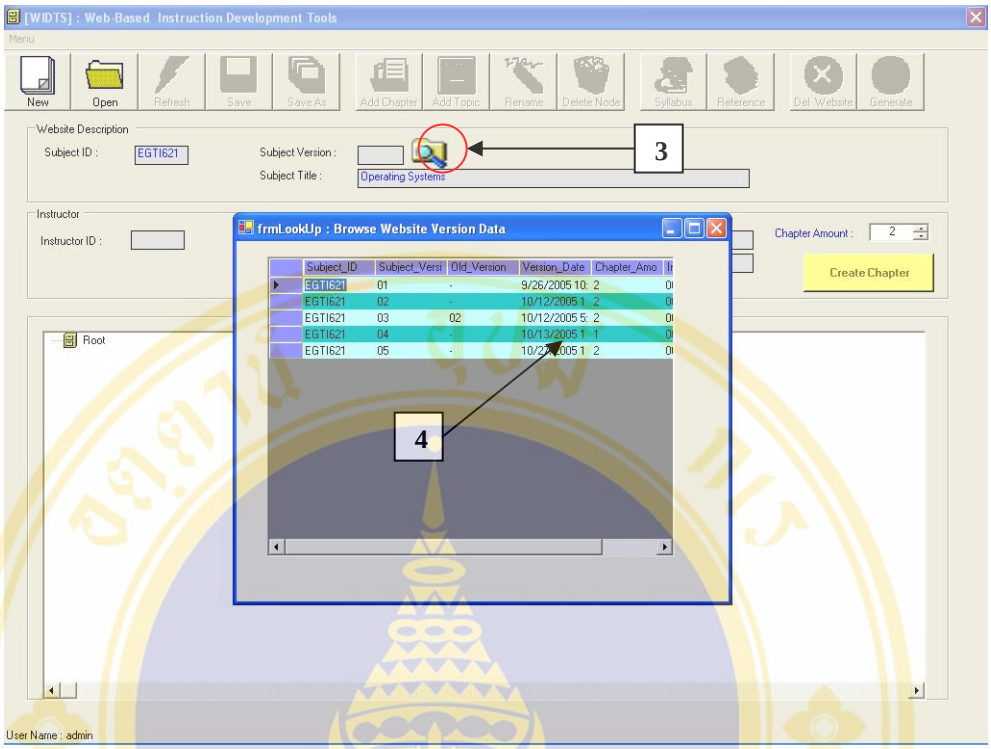
1. กดปุ่ม **“Save”** เพื่อทำการบันทึกข้อมูล
2. จะปรากฏข้อความแสดงว่าทำการบันทึกข้อมูลเรียบร้อยแล้ว

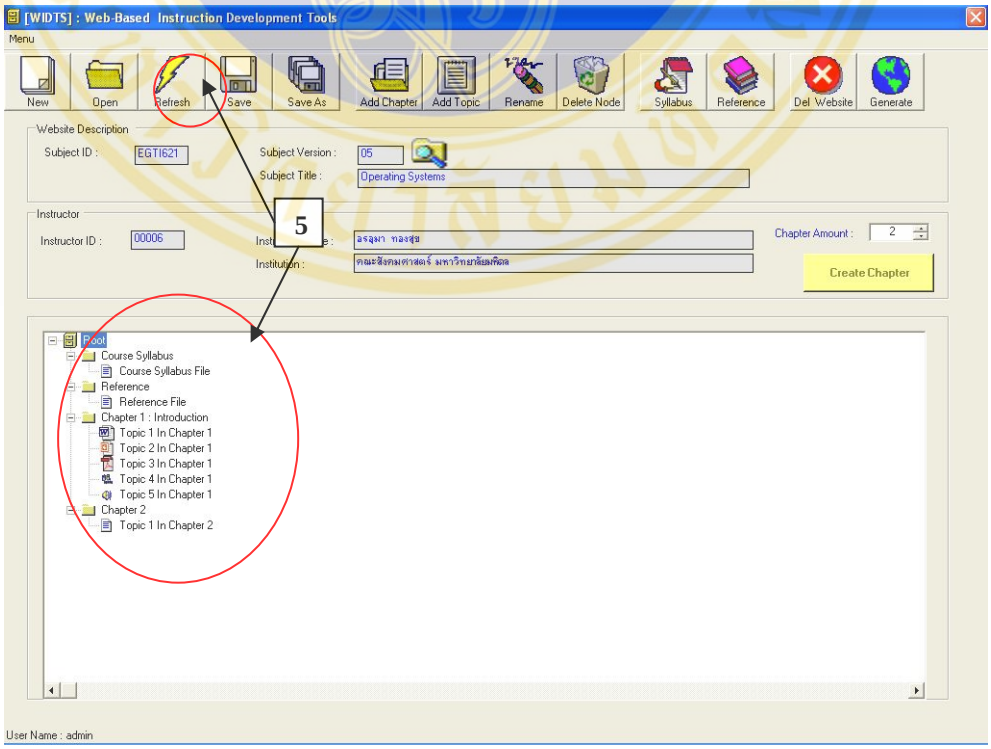


การเปิดข้อมูลที่บันทึกไว้

1. กดปุ่ม **“Open”**
2. จะปรากฏตารางรายวิชา ให้คลิกเลือกวิชาที่ต้องการ
3. กดปุ่ม **“Browse”** ในส่วนของเวอร์ชั่น
4. จะปรากฏตารางรายการเวอร์ชั่นที่มีอยู่ของรายวิชานั้น ๆ ให้คลิกเลือกเวอร์ชั่นที่ต้องการ
5. กดปุ่ม **“Refresh”** เพื่อแสดงข้อมูล

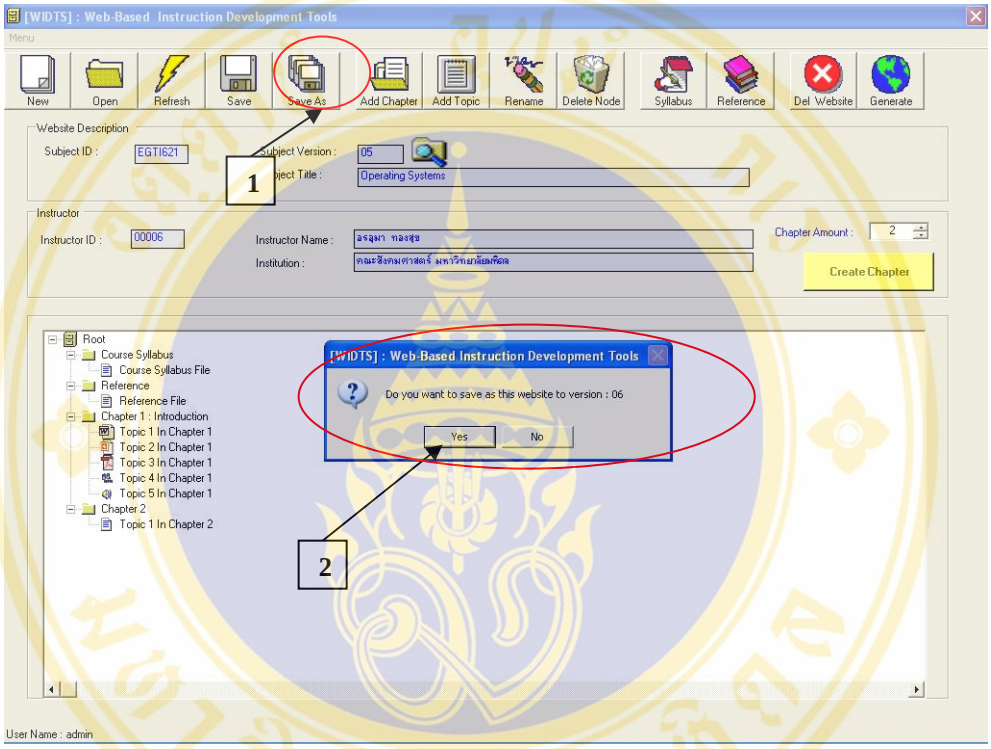






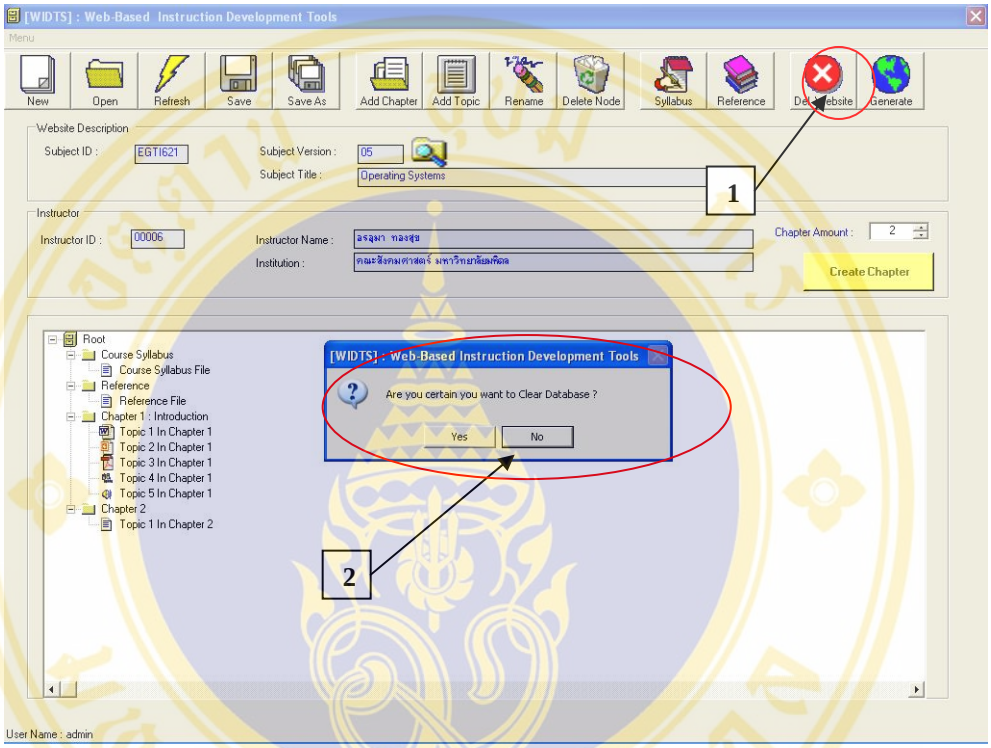
การบันทึกเป็น

1. กดปุ่ม **“Save As”** เมื่อต้องการบันทึกข้อมูลให้เป็นเวอร์ชั่นใหม่
2. จะปรากฏกรอบข้อความยืนยันการบันทึกเป็นเวอร์ชั่นใหม่ ซึ่งเวอร์ชั่นจะทำการระบุให้โดยอัตโนมัติ ให้ตอบ **“Yes”** เพื่อยืนยันความต้องการ



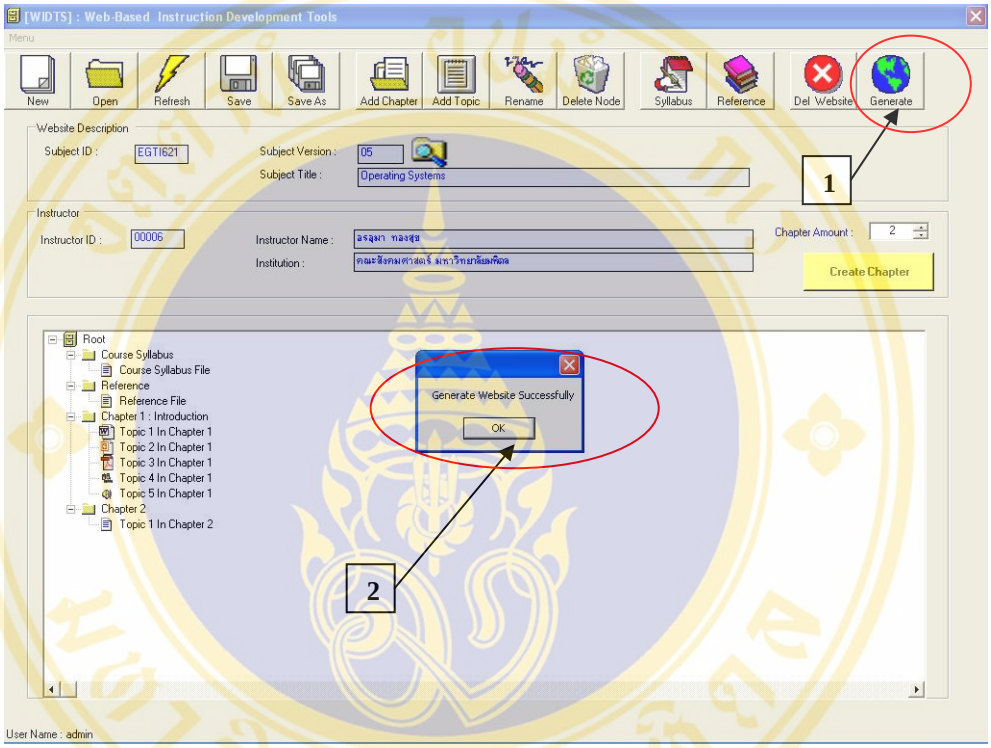
การลบข้อมูล

1. กดปุ่ม **“Del Website”** เมื่อต้องการลบข้อมูลในวิชาและเวอร์ชั่นนั้น ๆ
2. จะปรากฏกรอบข้อความยืนยันการลบข้อมูล ให้ตอบ **“Yes”** เพื่อยืนยันความต้องการ



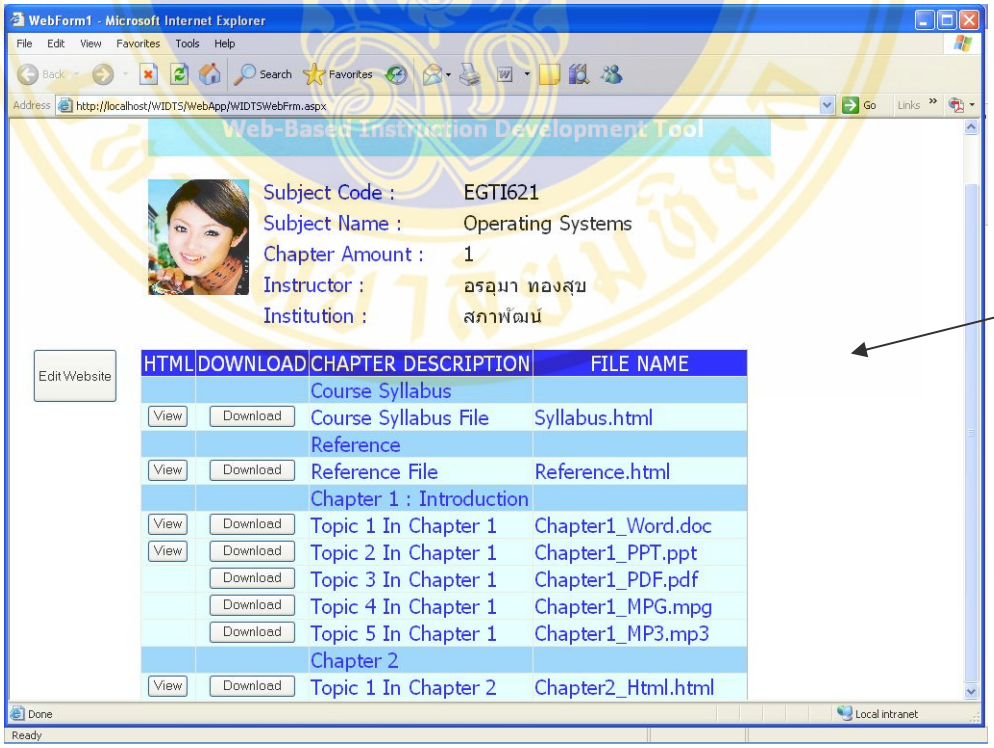
การสร้างเว็บไซต์

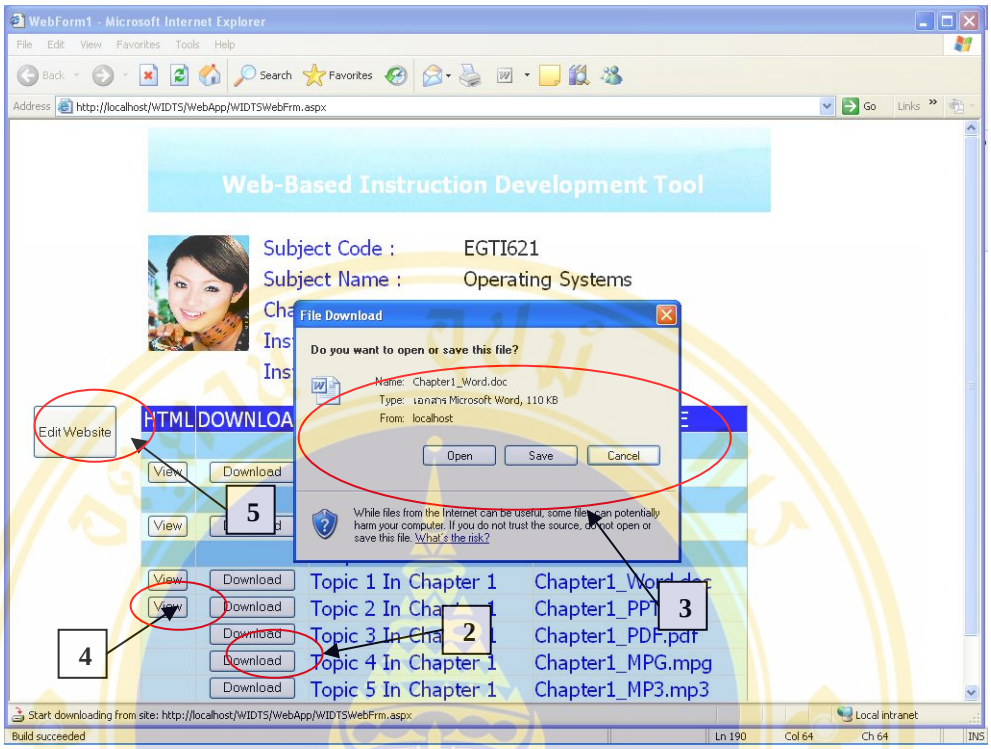
1. กดปุ่ม **“Generate”**
2. จะปรากฏข้อความว่า Generate Website Successfully เมื่อทำการสร้างเว็บไซต์เรียบร้อยแล้ว

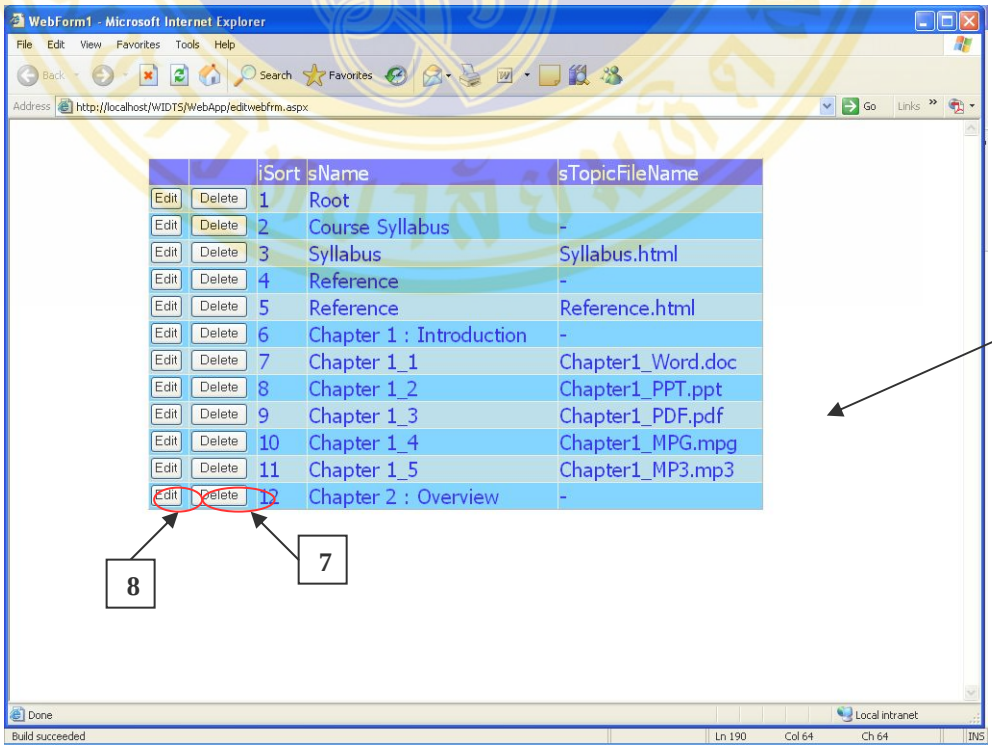


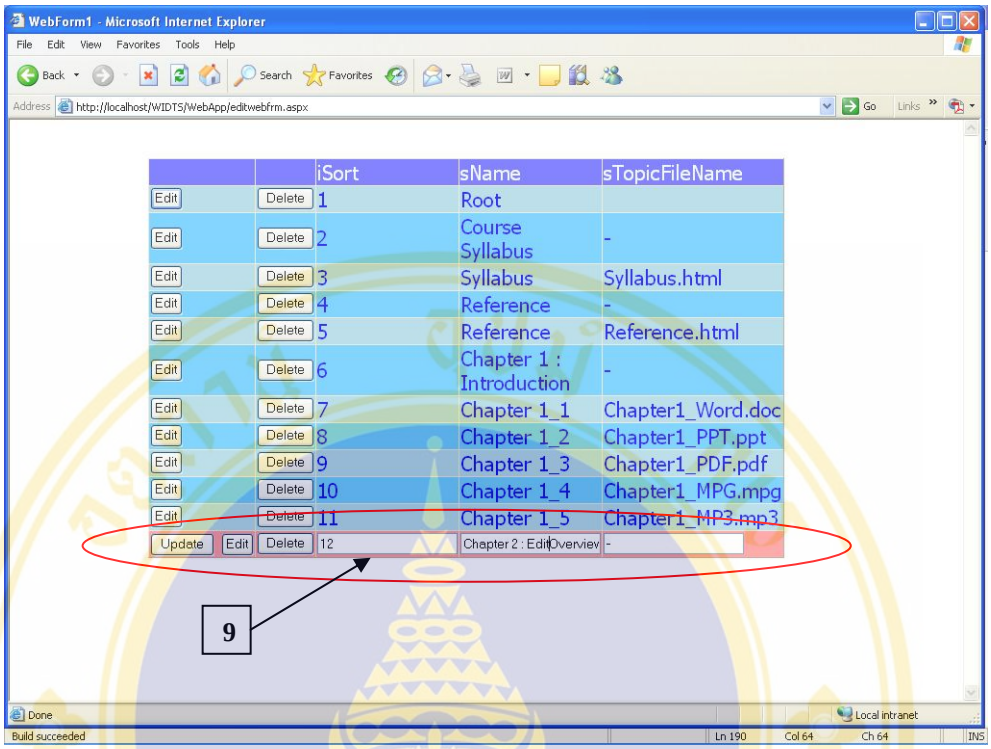
เว็บไซต์ที่ถูกสร้างขึ้น

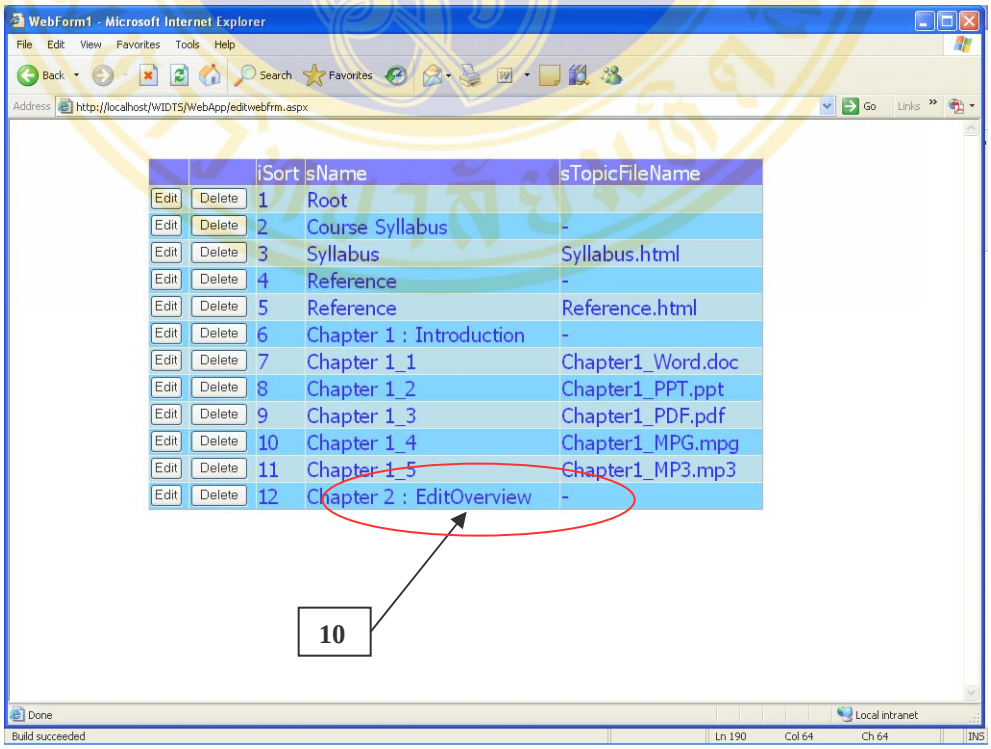
1. เว็บไซต์จะแสดงรายละเอียดของวิชา , จำนวนบทเรียน , อาจารย์ , บทเรียนและหัวข้อต่าง ๆ ซึ่งสามารถเปิด , ดาวน์โหลด และเปิดดูในลักษณะของไฟล์ html ได้
2. กดปุ่ม **"Download"** เพื่อเปิดและดาวน์โหลดไฟล์ในหัวข้อนั้น ๆ
3. กดปุ่ม **"Open"** หรือ **"Save"** ข้อมูล
4. กดปุ่ม **"View"** เพื่อดูข้อมูลในลักษณะที่เป็นไฟล์ html
5. กดปุ่ม **"Edit Website"** เพื่อแก้ไขข้อมูลในเว็บไซต์
6. หน้าจอแสดงข้อมูลที่สามารถแก้ไขหรือลบข้อมูลได้
7. กดปุ่ม **"Delete"** เพื่อลบข้อมูล
8. กดปุ่ม **"Edit"** เพื่อแก้ไขข้อมูล
9. จากนั้นข้อความในบรรทัดที่เลือกจะอยู่ในช่องข้อความที่สามารถแก้ไขได้ เมื่อแก้ไขข้อความเรียบร้อยแล้วให้กดปุ่ม **"Update"** แล้วกดปุ่ม **"Edit"** เพื่อสิ้นสุดการแก้ไขข้อมูล
10. ผลลัพธ์ที่ได้จากการแก้ไข











BIOGRAPHY

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