

**Universiti Teknologi Petronas**  
**Health, Safety and Environment (HSE)**  
**System**

by

**Aimi Diyana Bt. Zali**  
**(5817)**

**Dissertation submitted in partial fulfillment of**  
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**Universiti Teknologi PETRONAS**  
**Bandar Seri Iskandar**  
**31750 Tronoh**  
**Perak Darul Ridzuan**

**CERTIFICATION OF APPROVAL**

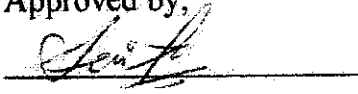
**Universiti Teknologi Petronas Health, Safety and Environment (HSE) System**

by

**Aimi Diyana Binti Zali**

A project dissertation submitted to the  
Business Information System Programme  
Universiti Teknologi PETRONAS  
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Approved by,



(Ms. Savita K. Sugathan)

**UNIVERSITI TEKNOLOGI PETRONAS  
TRONOH, PERAK**

June 2007

## CERTIFICATION OF ORIGINALITY

This is to certify that I am responsible for the work submitted in this project, that the original work is my own except as specified in the references and acknowledgements, and that the original work contained herein have not been undertaken or done by unspecified sources or persons.



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(AIMI DIYANA BINTI ZALI)

## **ABSTRACT**

The UTP Health, Safety and Environment System (HSE) within campus environment is a system that allows students, lecturers and employees in the university surrounding report any elements and actions that will cause harm, hazards and danger to the UTP community. Besides, Internet Forum will encourage people which are students and staff to share knowledge and information regarding. The main objective of this system is to develop a platform to user especially student to identify and report hazards which occurs near them and share the real stories about HSE through the system. The methodology that will be used is Prototyping-based methodology, which is Prototyping based methodology. This method will perform 3 phases concurrently, which is Analysis, Design, and Implementation. Analysis consists of consists of three steps which analysis strategy, requirement gathering and system proposal. Interview and Questionnaires are method used for requirement gathering. Testing stage will be done through manual and online survey. User can use the HSE Online Reporting to report hazard and incident happen in UTP. The functions of knowledge sharing in promoting health, the role of internet forum as well as successful steps in managing HSE are discussed in discussion. There were also Use Case Diagram, Class Diagram and Data Flow Diagram. There are system screenshot attached in Chapter 4. The system will help in improve in developing a safe community and surrounding as well as improving the HSE level in UTP. HSE UTP System is related closely with knowledge management system, focusing on knowledge sharing where people can share valuable HSE information, avoid reducing redundant work for the committees as well improve the HSE services. UTP HSE System is also a user friendly system and help in reducing time consumption for first time user.

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# **CHAPTER 1**

## **BACKGROUND**

### **1.1 Introduction**

There is a strong connection between the health and well being of people and their environments. When the environment is unsafe, stressful or unhealthy, ultimately both the organization and the employees are hurt. Everyone can benefit from a healthy surrounding. The goal of this report is to explain the objectives of the UTP HSE System, discussed how the system will function as well as how to implement the system in UTP.

### **1.2 Problem Statement**

Universiti Teknologi Petronas has identified the urgency of Health, Safety and Environment the same as important as academic fineness via producing a well-rounded graduates who are creative and innovative. Therefore, it is important to provide and maintain the health and safety environment for it lecturers, students, staffs and any other person who could be affected with its activities and conditions.

Besides that, all community especially students do not have a convenience platform to report all things that will cause hazard and risk to them and their environment. Implementing the UTP Health, Safety and Environment (HSE) System would really improve the health, safety and environmental conditions as well as achieving the university's vision and mission towards zero tolerance in hazard.

Currently, the HSE issues and incident is shares by HSE communities via sending email to staffs and lecturers. As a result, students still unconscious and unaware with latest HSE issues and incident happened on their surroundings especially in UTP and

also on other OPUs. In addition, a tight daily schedule of staff and lecturers make them do not have enough time to read all the emails and the sometimes, they tend to delete or ignore them. Besides, emails receive by staff are monthly automatically deleted until the memory reach its capacity, which is 6MB. With this system, peoples, which are lecturers, staffs and students, are not only having a platform of HSE reporting, but, the forums inside can encourage people in sharing all stories about accident and opinions about HSE issues.

UTP HSE System's forum is essentially a site composed of a number of member-written threads which are staff and students of UTP. Threads in a forum are either flat (posts are listed in chronological order) or threaded (each post is made in reply to a parent post). Each thread entails a discussion or conversation post by members regarding to share comments and stories about HSE issues occurs in UTP and others OPUs. These threads remain saved on the forum website for future reading indefinitely or until deletion by HSE committees.

Search Engine is also included in the UTP HSE System's forum and discussion. This will make people easy to search topics and threads by entering keywords at search engine text field. Besides, the forum also included avatars, which is a picture or icon that represent each member. This will allow members to avoid feel bored during communicate interactively with forum's members and to have fun while posting threads and discussing new HSE issues.

## **1.3 Objectives and Scope of Study.**

### **1.3.1 Objectives**

UTP HSE System objectives are:

1. To analyze the requirement of Health, Safety and Environment in university surrounding.
2. To design a HSE system in UTP.
3. To send reports using Online HSE Reporting and sharing information, stories and news through forum and discussion with search engine.

### **1.3.2 Scope of Studies**

The scope of study focused on the Health Safety and Environment elements and risk assessment within the campus. As we know, the daily operations would, from time to time, impact upon the environment and human being. Daily operations mentioned here means all activities occur in UTP, such as café operations, lab experiments, and also construction site. All operations can cause harm to peoples if it is not handled properly. Besides, the scope also consists of identifying hazard, unsafe actions and unsafe conditions circulating the campus environment. It also involves studying the method and solutions in order to eliminate all unsafe elements.

In addition, the HSE System is appreciating knowledge sharing by including internet forum. Internet forum is a facility on the World Wide Web for holding discussions and posting user generated content, or the web application software used to provide the facility. Using forum, user can conveniently post, read and search for topics regarding the HSE issues and incidents. Forum, or also called discussion board will include search engine, so people can easily find out issues or comments posted by forum's members by entering key words. A search engine is an information retrieval system designed to help find information stored on a computer system, such as on the World Wide Web, inside a corporate or proprietary network, or in a personal computer.

Internet forum is very important for user to share stories, issues and comment regarding HSE in UTP. With HSE Committees observation, the internet forum implemented in UTP HSE System will always shows correct and accurate news about HSE in UTP. Further aspects regarding Internet Forum will be discussed in Chapter 4 which is in Discussion part.

Knowledge sharing is commonsense comprehensibility, along with a certain degree of inter-activity implicit in any sharing. User can also send real stories regarding HSE together with video, picture attachment and voice record to system administrator. From there, user can gather many information and lesson learned from issues highlighted by participants. HSE Archive functions as a database to store articles, issues, and also stories about HSE. Using Google search engine, users which are students, lecturers and staff can easily search and read information without need to open another window for Google website. Search engine is useful in order to make the life of users easier by indexing this ever growing information.

## **CHAPTER 2**

### **LITERATURE REVIEW**

As refer to Sissela Bok(2004), health means "a state of complete physical, mental and social well being and not merely the absence of disease or infirmity." Health means the level of functional and/or metabolic efficiency of an organism at both the micro(cellular) and macro(social) level, while safety means the condition of being protected against physical, social, spiritual, financial, political, emotional, occupational, psychological, educational or other types or consequences of failure, damage, error, accidents, harm or any other event which could be considered not desirable. Besides, environment refers to a complex of surrounding circumstances, conditions, or influences in which a thing is situated or is developed.

Oxford Dictionary, Seventh Edition (1994) define the words of health, safety and environment, which is health defined as state of being well in body or mind; mental or physical condition while safety means being safe and freedom from danger. Environment means surroundings and circumstances that affect person's life. From there, the Health, Safety and Environment phrases means a condition of surrounding that is protected from external and internal risk, hazard and danger that will causes harm and damages to the surrounding. The UTP HSE System within campus is design in order to achieve zero tolerance to hazard as to maintain safety and security in the university surrounding.

Dr Badhrulhisham (2006) said that: "...it was important to ensure that the students conducted their activities in a safe environment". We always heard about the urgency of health and safety in workplace, but the secure environment begins during learning stage in schools and universities. The UTP HSE System has an additional feature, which is internet forum that allow students to post threads and response to HSE issues with HSE Committees observation. The internet forum also allows students, staffs and lecturers to communicate interactively with each other by sharing stories and opinions about latest HSE issues happen in UTP or other Petronas unit.

The project aims to make students, lecturers and workers' become more interested and closer to the urgency of health and safety environment not only within campus surrounding, but to all activities that will effects the surrounding as well.

According to Michael A. Callahan and Ken Sexton (2007), cumulative risk refers to the combined threats from exposure via all relevant routes to multiple stressors, including biological, chemical, physical, and psychosocial entities. Cumulative risk assessment is a tool for organizing and analyzing information so as to examine, characterize, and possibly quantify the combined adverse effects on human health or ecological resources from multiple environmental stressors.

Risk assessment is the process of quantifying the probability of a harmful effect to individuals or populations from certain human activities. The HSE System within campus allows student and lecturers to report all things that will cause harm, risk and danger to the campus environment and the community itself. In addition, the system can act as a medium and platform for students to reduce hazard in their surrounding. The reports will be take action by University HSE Committee.

Steve Denning (2004) said that: "... knowledge is not just an explicit tangible "thing", like information, but information combined with experience, context, interpretation and reflection". Internet forum will allow people in sharing opinions, pictures, videos and also articles regarding HSE issues as appreciating the knowledge sharing from best practices and lesson learned.

According to Mr. Mohamad Johari Dasri (2006), "HSE policies and procedures are not just to be framed up on the wall but to be understood and followed at all times". HSE System is purposely to get people involve in keeping a safe environment. HSE need to be implemented all over the place, including university environment as well as workplace, in order to reach zero tolerance in hazard and incidents.

Fareed Hussain (2004) said that, "...having knowledge implies that it can be exercised to solve a problem". In fact, HSE System can help in reducing the number of incidents and HSE issues by increasing students and lecturers awareness regarding the urgency of safety and security. Besides, information shares by students and lecturers can contribute in developing a healthier culture among UTP communities.

In addition, Fareed Hussain (2004) explaining the term of knowledge management. He said that, "knowledge management requires a major transformation in organizational culture to create a desire to share, the development of methods that ensure that knowledge bases are kept current and relevant, and a commitment at levels of a firm for it to succeed". All reports regarding HSE issues will keep and store in a database in order to make the information successfully circulating among UTP community.

The online system can overcome the problem found when use the paper-based or manual system Faizullah Mahar (2003) said that, "...manual systems present numerous problems that are solved by computer and communication technologies. Sickness, worry, moodiness, and other inherently human variables can also contribute to high error rates in manual systems. Source documents and file folders are easily lost are misplaced." His explanation shows that manual system or paper-based system can



cause many problems and this will affect the system in terms of efficiency and effectiveness.

Besides, Tromthy and Krasnewch (1994) discussed the drawbacks of manual system. They said that, "...manual systems are labor intensive and, therefore, costly." Manual system will involve many workers in organizing files, folders and data keeping. In addition, Wilkinson (1986), said, "The level of service support in manual systems is often inferior". It will be hard to obtain information for decision making as well as provide sources for knowledge sharing if the management still use the manual system. Files consists of reports that are not stored in the database will cause difficulties during data retrieval and this will be a matter for HSE Committees to ensure the efficiency and effectiveness of the existing HSE system.

Mehler (1992), said, "Virtually every thing takes longer to do with a manual system." Sorting and categorizing files will take some times. In addition, handling and processing a lot of HSE report manually will cause lagging of taking action for each case. Besides, it also causes lack of consistency and poor communication. In contrast, Health, Safety and Environment System is flexible accessible where user can also submit HSE reports until midnight. It different from the manual system which is depends on office operating hours

UTP Health, Safety and Environment System is an online system which offers flexibility and user-friendly functions so people can conveniently report and share hazards and HSE issues occurs in UTP environment. One of them is database system and data storage to keep all records and reports regarding hazardous and safety matters. Those records are useful for knowledge management system. To make user easily search information regarding HSE, UTP HSE system also provide Google search engine. Qazi Mudassar Ilyas, Yang Zongkai and Muhammad Adeel Talib (2004) said that, "...search engines and catalogues have been trying hard to make the life of users easier by indexing this ever growing information".

Risk assessment is very important in order to evaluate the quality of health, safety and environment. Julie Wakefield (2000) said that, "... monitoring of human exposure to environmental agents is often the weakest component of environmental health work, severely limiting risk assessment capabilities". Risk assessment is the simplest, cheapest and effective measures to ensure the valuable assets of UTP, which is its student and environment, are always protected. Risk assessment is not stated as a regulation for UTP, but we are required to protect people and environment as far as "reasonable practicable".

Neef (1999) expanded the more micro-level view of knowledge management by commenting, "...knowledge management should be seen as one of the most concrete and important set of practices and policies that an organization can adopt, marking a significant step in an enterprise's evolution toward becoming a global, learning organization that can survive in the knowledge based economy." Crawford and Strohkirch (2006) said, technology becomes the tool, the organizational structure becomes the context, and the knowledge becomes the "stuff" of great advances. As a result, internet forum with search engine, HSE archive will be implemented in order to practice the knowledge management in UTP.

Baines (1997) puts the knowledge management process squarely at the intersection of technology, organizational structures, and cognitive-based strategies. It is a good combination of implementing knowledge management with technology and organizational structure. Technology can be used as a medium of spreading knowledge from best practices based on assessment and evaluation done among the organization itself. As for UTP HSE System, there is HSE archive, which is a collection of news and articles to be shared and retrieved.

Davenport and Prusak (1998) list down the major objective of any knowledge management project. There are:

- To create knowledge repositories to store knowledge and information,
- To improve knowledge access or transfer,
- To enhance the knowledge environment to facilitate creation, transfer, and use of knowledge, and
- To manage knowledge as an asset and to recognize its value.

Bollinger and Smith (2001) suggest that the goals of knowledge management should be to effectively manage explicit knowledge through better systems and to build an organizational culture supportive of sharing and creating tacit knowledge.

Crawford and Strohkirch (2006) said “One of the most important outcomes of effective knowledge management is the ability to share that knowledge with others. Without effective communication, knowledge management simply serves as a repository of business intelligence rather than ever realizing the full synergistic effect of the open knowledge work environment.” Forum and discussion provided by UTP HSE System allow members to communicate with each other by posting threads. Issues and comments with HSE Committees observation will help user getting and gather accurate information from the internet forum itself.

Hayek (1945) said knowledge sharing is not a new concept; it was noted that a business’s most important asset was its ability to process information. P. A. Schulte, T. J. Lentz, V. P. Anderson and A. D. Lamborg (2006) said that, knowledge gained in one part of an organization may be lost to others because there is no way to track it. This is how the HSE Archive works in order to keep the information, so that the data is easily retrieving and can be use as further reference. They also said, “...when knowledge is not managed, problems once solved are repeated”. HSE Archive will help the HSE Committees referring back the previous cases recorded in the database, so that current HSE problem will found a better solution in order to ensure the safety of UTP community.

Nonaka and Takeuchi (1995) suggest that knowledge, unlike information, is about beliefs and commitment. However, Ashton (1998) and Earl (2001) argue that knowledge needs to be captured and codified as much as possible in order to exploit and leverage it for the organization's benefit. Codification in organizations converts knowledge into accessible and applicable formats. When knowledge users categorize knowledge, describe, map and model it, then it can be simulated and embedded in the business rules and processes. It similar to the objective of having knowledge sharing in UTP HSE System, which is to make people learned from experiences.

Collison and Parcell (2002) also refer to Knowledge management as encompassing organizational learning, human resources and technology:

- connecting the people who know, and the behaviors to ask, listen and share,
- processes to simplify sharing, validation and distillation,
- common reliable technology infrastructure to facilitate sharing

According to P. A. Schulte, T. J. Lentz, V. P. Anderson and A. D. Lamborg (2006), the XV Congress of Occupational Safety and Health in 1999 concluded that the number one challenge in the next decade is to transfer what we know about safety and health and working conditions to practical terms. Similarly, an international workshop on research dissemination concluded that 'one of the greatest problems in the occupational safety and health community is the lack of appropriate emphasis on the research involved in dissemination, adaptation, and utilization of information'. These knowledge systems can be best understood through the framework of the knowledge cycle. This statement shows us a strong relationship between HSE and knowledge management as implemented by UTP HSE System. Knowledge management will create, transfer and utilize the knowledge regarding HSE and makes the HSE data as manageable assets to HSE Committees especially during spreading the HSE information and knowledge to UTP students, staffs and lecturers.

P. A. Schulte, T. J. Lentz, V. P. Anderson and A. D. Lamborg (2006) said that, knowledge is also created during the synthesis of information for recommendations. This involves qualitative and quantitative risk assessment, literature reviews and evaluation, and application of judgment to occupational safety and health information in the process of developing occupational exposure limits. HSE audit by HSE Committees is one of the methods to evaluate risk and safety in UTP. Data regarding HSE gathered from UTP HSE System through HSE Online Reporting can contribute in evaluating HSE in UTP.

The CEO of Hewlett-Packard has been reported (Drew, 1999) to say that 'If we knew what we knew, we would be 30% more productive'. This is referring to implementing knowledge sharing in UTP HSE System. Knowledge sharing allow user to share issues, news and articles in order to increase UTP community information regarding HSE.

Some universities in overseas has been developed their own HSE system such as Belmont Abbey College, The Universities of The West Indies and also Gavilan College. They have built the HSE system earlier and the objective is almost similar with the UTP HSE System itself, which is to improve the level of awareness regarding the urgency of health and safety of environment.

GlobalSantaFe, which is an oil and gas company that have 61 offshore drilling rig throughout the world has used Safety Dashboard, as their health, safety and environment web based system. Safety Dashboard has been developed using Microsoft® .NET technology by an IT company, which is Software Architect. Safety Dashboard is function as a medium in order to capture, analyze, and report worldwide safety data in real time.

Safety Dashboard has proven to be a huge success for GlobalSantaFe where the critical safety reports that used to take a month or two to produce are now available in real time, and staff that used to be mired in paperwork now focuses their energies on implementing process improvements. GlobalSantaFe has found that the Safety

Dashboard give advantages to their company for its accountability, security enhancement, less paperwork, more productivity, preventive program participation improvement, accelerated intelligence, competitive edge improvement and also precedent for improvement.

In Scotland, the Health and Safety Executive and Glasgow City Council encourage trade organizations, training providers and other intermediaries of small business owners to learn all about e-COSHH. e-COSHH, which is the web based program will ask the business owner to input information about the chemicals they use, and how they use them. Besides, e-COSHH then automatically identifies the correct control solutions and produces easy to follow instructions on how to put the guidance into practice - and pointers on how to carry out other duties required by the Control of Substances Hazardous to health regulations (COSHH). Andy Morrison, Environmental Health Officer (2005) said that, "All employers have a legal obligation to protect their workers' health when using hazardous substances..." For those who have attended the e-COSHH training agreed that this HSE web-based system can lead to a reduction in workplace-caused illnesses.

Testimonials from GlobalSantaFe and small business owners in Scotland shows that, HSE web based system really help them in terms of availability, security and productivity. Marie Christine Roy, Yves Rannou, Lucie Rivard (2007) said, "The usability and ultimately the success of Web-based services are partly due to effective user support. One important aspect of Web application usability is its capacity to successfully support users while they are completing their tasks". These sentences support the UTP HSE system that will be operated online and consists of internet forum and discussion board as well.

Marie Christine Roy, Yves Rannou, Lucie Rivard (2007) said that, in most of these services, well designed online support systems will serve the following objectives:

1. They reduce the need for human support: The support or help desk personnel typically spend most of its time solving common problems people have when using online; applications. When the appropriate support tools are integrated in the application, these personnel can spend more time focusing on complex and rare problems;
2. They increase the user's autonomy to find relevant information and execute a task: Typically, Web application users do not have easy access to human support resources and will need to rely on their own abilities to be able to execute their tasks;
3. They encourage the use of online services: Although many services are now offered online, they are still used by a small proportion of people, mainly because of their complexity; online support should reduce this complexity and encourage more widespread use;
4. They train in context and just in time (through push or pull support functions): For most Web application, formal training sessions are unfeasible or undesirable. The most effective way to ensure learning is to provide training and task information at the time it is needed;
5. They can provide constant support for the users in more humane, interactive, personalized and attractive way; and
6. They can reduce information overload. When online support is focused only on the information required in a specific context and time frame, the user does not have to memorize all the information provided in traditional user guides or application training sessions.

Internet forum is one of the features included in UTP HSE system. Internet forum will allow user to interact with each other, posting threads and responds to issues posted by other user regarding HSE issues happen in UTP and also other Petronas unit. Scott Lindsay (2007) said that, "...there is a psychology to the use of forums that goes beyond simple information gathering. For many online users this may be the only way they feel comfortable communicating with strangers. The positive side to this phenomenon is that many of the shy, quiet types have valuable ideas they are willing to share through the use of a forum or message board". For an example, International Labor Organization in Japan has launched the internet forum on safety and health culture at the workplace in order to discuss the best solution to be adapted to reduce the total loss due to occupational diseases.

Lesson Learned is an added feature in HSE Archive link. This session will allow user in order to share real stories including sharing videos and voice recording in order it more interesting and attractive. When user submit stories, the system administrator will observe first in order to ensure the accuracy of those stories before it will displayed in Lesson Learned session. Via Lesson Learned, people will more attractive to learn and discover a new thing regarding HSE awareness and help in order to prevent similar incidents in the future.

Rio Tinto, which is the largest mining company, has launched Safety Notice as their HSE web based system. Safety Noticed will displayed under the headings of What happened, Where it happened, What were the causes, What has been done about it as well as optional digital photographs, and contact details for further information. The information and knowledge about HSE is spread out within the Rio Tinto group, as a result, the lost-time injuries are down 33% on the same period for 1999. The total of all injuries is down 24%, and the number of shifts lost is down 29%.



Besides, John P Girard and Sandra Lambert (2007) said that, "...stories can be told in a variety of modes that include: visual accounts, ballads, metaphors, text, and voice. Telling good stories serves the organization with an effective means of collecting wisdom through experience". However, the system administrators need to hide and modify any threads posted in forum and also stories submitted by user for Lesson Learned session as a safeguard under unintended confidentiality or legal problems, or malicious misuse. Alain J. Godbout, Godbout Martin Godbout & associates (1999) said that, "...various attempts at developing a comprehensive knowledge management framework have identified that one of the key functions in creating knowledge assets is the task of selecting or filtering public domain knowledge in order to make it relevant to the organization".

Plotkin (1994) agreed that, animals as well as person use a filtering process that determines which pieces of information to retain. This proves that UTP HSE System needs a system administrator in order to filter and observe the contents of internet forum and also the stories that will be displayed in Lesson Learned session in order to ensure that UTP HSE System is continually spread up a true information for peoples in UTP.

Shaam – Information System state the benefits of using Prototype-based Methodology, which is:

- An in-depth understanding by the user of the future system.
- A greater degree of cooperation with the user in the development process.
- Relatively short planning and development time.

Tsouros et al.,(1998) said that, "...it has been reported that university-based health promotion can potentially enhance the contribution of universities to improving the health of populations and to adding value in the following ways: 1) by protecting the health and promoting the well-being of students, staff and the wider community through their policies and practices, 2) by increasingly relating health promotion to teaching and research, and 3) by developing health promotion alliances and outreach into the community." Here, it shows that promoting HSE culture in UTP can give advantage in creating a health environment for the community especially student.

Tian Xiangyang, Zhou Lan, Mao Xueping, Zhao Tao, Song Yuzhen and Marta Jaguszyn (2003) discussed, "...the effect of health promotion intervention on students' health knowledge and behavior should be treated cautiously". Knowledge management offered a continuous learning through knowledge sharing where the information and knowledge are shared and circulating the community.

UTP HSE System is base on Knowledge Management system, which is knowledge sharing. According to Mark Sharratt and Abel Usoro (2003), knowledge sharing implies the giving and receiving of information framed within a context by the knowledge of the source. In addition, sharing is a process whereby a resource is given by one party and received by another. UTP HSE System has internet forum so that people can share stories, opinions and information about HSE.

Mark Sharratt and Abel Usoro (2003) discussed, the process of knowledge sharing involves the knowledge-source using the online community system as a mechanism to effectively convey what they know. For example, knowledge may be shared in the form of a story describing a similar experience whereby a method or technique was developed or used to solve a problem. Conversation can occur electronically via email and online discussion board tools. User can upload file consists of real stories regarding HSE issues and incident happen in

**UTP and other Petronas Unit, so that the real stories can help telling the experiences when facing a crucial situation while handling with HSE issues.**

## **CHAPTER 3**

### **METHODOLOGY**

#### **3.1 Methodology**

This project will be develop using the Prototyping-based methodology. Prototyping-based methodology performs the analysis, design and implementation phases concurrently, and will be done continually until the system is fully accomplished.

With this methodology, the basic analysis which and designed are performed, and work will begin with system prototype, which is a “quick and dirty” program that provides a minimal amount of features. For UTP HSE System, the system prototype will show some of the front page of every feature in the system, which is the system home page, HSE Archive, HSE Reporting, Forum and Discussion and HSE Articles.

Prototyping-based methodology will help in developing the UTP HSE System effectively. By showing the system prototype to users and client of the system, it might get many comments, opinions and feedbacks which are used to re-analyzed, re-design, and re-implement a better UTP HSE System prototype that consists of some added features. End users such as lecturers and HSE Committees will continually giving comments until the UTP HSE System prototype provides enough functionality to be used and implement. Continuously refinement will help in creating better system.

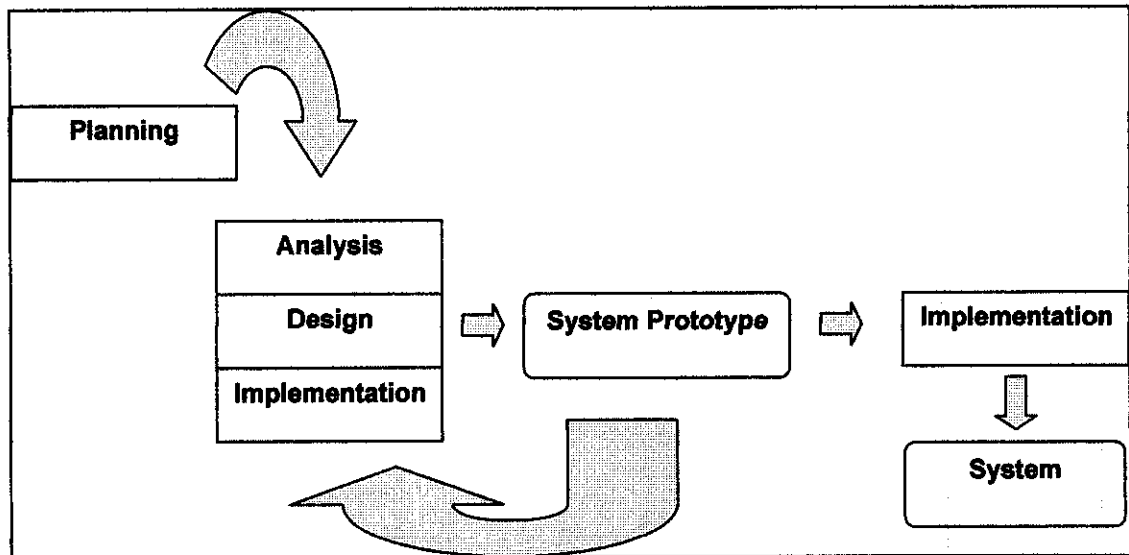


Figure 3.1: Prototyping-based Methodology

### 3.2 Analysis Phase

Analysis phase will discuss the user requirement and system requirement question of who will use the Health, Safety and Environment (HSE) System, what the system will do as well as where and when to be used. Some universities in overseas has been developed their own HSE system such as Belmont Abbey College, The Universities of The West Indies and also Gavilan College. They have built the HSE system earlier and the objective is almost similar with the UTP HSE System itself, which is to improve the level of awareness regarding the urgency of health and safety of environment.

Analysis phase contains three steps which are:

1) **Analysis Strategy.**

Analysis strategy includes an analysis of the current system (as-is system) and ways to design a new system (to-be system).

2) **Requirement Gathering**

This step will highlight the information gathering which is useful for research purpose. Requirement gathering can be done via interviews, questionnaires, document analysis, and also observation. Requirement gathering purposely leads to the development of the concept for a new system. For this purpose, an

interview session and questionnaires regarding HSE in UTP has been done. The findings will be discussed during Result and Discussion.

### 3) System Proposal

This is a documentation of analyses, system concept and models. System proposal is the initial deliverable that describes what requirements the new system should meet.

#### **3.2.1 Analysis Strategy**

Currently, the HSE Communities only spread news and issues about HSE through email to all staff and this problem cause UTP student unaware about what really happen to their environment. As for new system, it will answer who, what, when and where question mentioned above, which is hazards and HSE issues that will be shared among UTP community itself. They are staffs, lecturers and also students. It is an online system and can be use anytime and anywhere by user. The data are stored online and can be retrieve back using search engine.

#### **3.2.2 Requirement Gathering**

This method has a relatively thorough analysis, which involves requirement gathering and developing ideas for the system concept. There are many methods to collect information, which are interview, question format, Joint Application Design and questionnaires. For this system, questionnaires and interview has been used as gather information and system requirement. Information gathering will involve the Health Safety and Environment elements, hazard identification and risk assessment, the solution and method that will be used, the user of the system and also the basic of internet forum with search engine.

### **3.2.2.1 Interview**

Interview is the most requirement-gathering technique. To develop a successful UTP HSE System, interview has been done with UTP HSE Committees to get opinion, requirements, and information about the real HSE implementation in UTP. Besides, during interview session, HSE Committees also show the flow of the current system and sample of manual report paper. Other information and results of interview will be discussed later during discussion session in Chapter 4.

### **3.2.2.2 Questionnaire**

A questionnaire is a set of written questions for obtaining information from individuals. The users of the UTP HSE System are students and staffs which is including lecturers. A questionnaire regarding the UTP HSE System has been done to students and staffs. Those questions were design to gather user requirement as well as to have more input and information about heir opinions regarding the management and HSE awareness in UTP. More information and results regarding the questionnaire will be discussed later during discussion session in Chapter 4.

### **3.2.3 Functional Modeling**

Functional models describe system process and the interaction of an information system with its environment. Two types of models are used to describe the functionality of an information system, which is activity diagram and use case diagram.

### **3.2.3.1 Activity Diagram**

Activity diagram support the logical modeling of the workflow of UTP HSE System. It involves many different use case and details of the individual use case. Activity diagram consists of actions and activities, object nodes, control flows as well as object flows, control nodes and swimlanes. Actions and activities will represent manual or computerized behavior. Object nodes will show the flow of information from one activity to another activity. Both control flows and object flows are on purpose to show the paths of execution and flow of objects thorough a business process. Control nodes consists initial, final-activity, final-flow, decision, merge, fork, and join. Finally, swimlanes break up an activity diagram in a manner that is useful in assigning responsibility to objects or individual that would actually perform the activity.

### **3.2.3.2 Use Case Diagram**

Use case will show what UTP HSE System need to do and interaction of the system with end user, which is students, staffs and lecturers. It represents the external view of the system from the perspective of the user. Use case consists of actor, which represent the end users and associations that show two-way communication between use case and user. In addition, use case in Use Case diagram acts as a major process of the system and subject boundary will enclose the use cases. The Use Case diagram will be attached in Appendix.

### **3.2.4 Structural Modeling**

Structural Model describes the structure of the data that supports the UTP HSE System. Class Diagrams is a static model that shows the classes and relationship among classes in UTP HSE System. Class diagram contains class name, attribute and also method. Class diagram for UTP HSE System will be attached in Appendix.



### 3.3 System Testing

The system will be tested by user, which is student, lecturer, staff, and also the HSE Committees itself. System testing will be divided to 3 part, Unit Testing, System Testing and Acceptance Testing. User Testing involve testing small particles in the system, while System Testing involve the whole part of the system to ensure its usability, functionality and availability. Lastly, Acceptance Testing consist of manual and online testing, where it will measuring the differences between the manual system and online system. Clients that involve in Acceptance Testing are students, lecturers, staffs and HSE Committee.

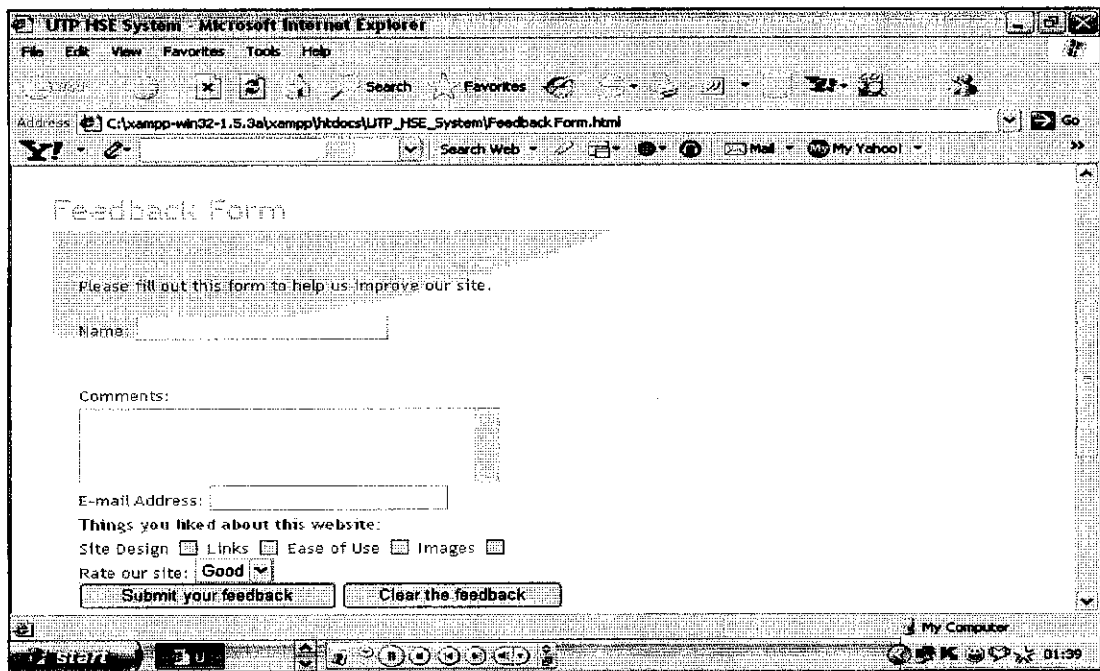


Figure 3.2: Online Survey

Figure 3.2 shows the online survey that will be completed by user in order to test the system functionality and user friendly. User will enter name, comments about website, email addresses, things that they like about this website as well as rated it. From the result, the interfaces, functionality and availability can be improved from time to time.

### 3.3 Software and Tools Use

The UTP HSE System will be implement using

- **Macromedia Dreamweaver**

Macromedia Dreamweaver is a professional HTML editor for designing, coding, and developing websites, web pages, and web applications. This project will be implemented using Macromedia Dreamweaver 8. Using Macromedia Dreamweaver 8, user can quickly write web pages without writing a line of code, use drag-and-drop features, utilize the database-driven web applications and others.

- **PHP**

PHP is a server-side scripting language for creating dynamic Web pages. When a visitor opens the page, the server processes the PHP commands and then sends the results to the visitor's browser. PHP's language syntax is similar to C's and Perl's. There is no need to declare variables to use them, and it's easy to create arrays and hashes (associative arrays). PHP even has some rudimentary object-oriented features, providing a helpful way to organize and encapsulate your code.

- **phpMyAdmin**

phpMyAdmin is a tool written in PHP intended to handle the administration of MySQL over the Internet. Currently it can create and drop databases, create, drop, alter tables and delete, edit, add fields, execute any SQL statement, and manage keys on fields.

- **Apache**

The Apache HTTP Server Project is a collaborative software development effort aimed at creating a robust, commercial-grade, feature, and freely-available source code implementation of an HTTP (Web) server

## CHAPTER 4

### RESULT AND DISCUSSION

#### 4.1 Result

##### 4.1.1 Questionnaire

The purpose of this section is to provide a detailed analysis of the collected data through the survey and a comprehensive comparison between the conclusions that have been reached through the questionnaires. The questionnaires are all about implementing the HSE System in UTP. From the survey, the result is as shown in the table and charts below.

Survey Questions	Yes	No
HSE Awareness in UTP	20%	80%
Aware the existence of HSE Committees	77%	23%
Awareness of HSE Policy and Procedure	66.66%	33.34%
HSE issues identification in UTP	71.42%	28.58%
Possibility to report HSE issues	66.66%	33.34%
Awareness of place and procedure to report HSE issues	47.61%	52.39%
HSE System have impact on safety level in UTP	80.95%	19.05%
Method Preferred – Online System	9.52%	90.48%

Table 4.1: Questionnaires Result

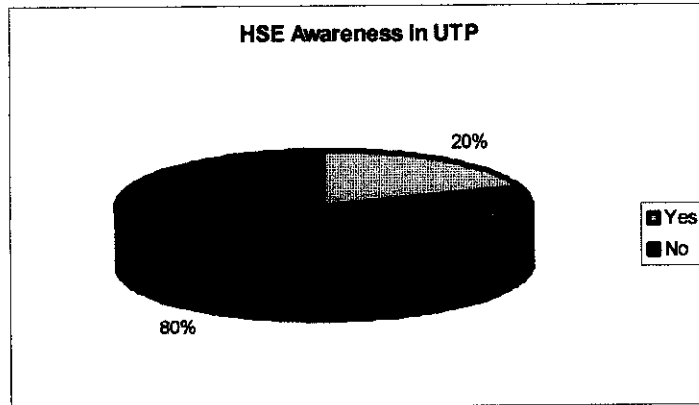


Figure 4.1: HSE Awareness in UTP

Figure 4.1 shows that, the HSE awareness level in UTP is only 20%. This is because the incident and safety issues are only spread up to lecturers and staff using emails sent by HSE Committees. Unfortunately, email received by lecturers and staff will automatic monthly deleted until the memory reach its capacity, which is 6MB, and because of tight schedule, they tend to delete or just ignore emails about HSE. Besides, student only have village discussion board and internet forum to discuss issues. No formal discussion board and internet forum for HSE issues with HSE Committees observation.

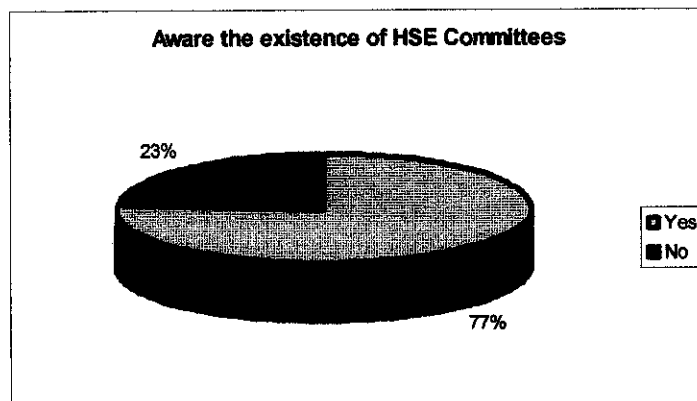


Figure 4.2: Aware the existence of HSE Committees

Figure 4.2 shows that, the awareness level of the existence of HSE Committees is only 77%. Some of respondents, which are 23%, are not realize the existence of HSE Committees. Their functions and responsibilities must be exposed to students, staff and lecturers, so people can be familiar with them and their task.

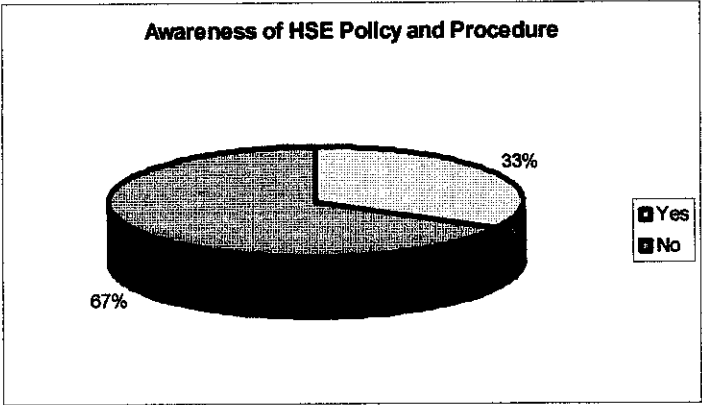


Figure 4.3: Awareness of HSE Policy and Procedure

Figure 4.3 shows that, only 33% from the respondent aware the HSE Policy and Procedure. Some students are still not alert the about it. This situation happen as those policies and procedures were only printed in the student handbook. Some of students tend to ignore and not read the student handbook.

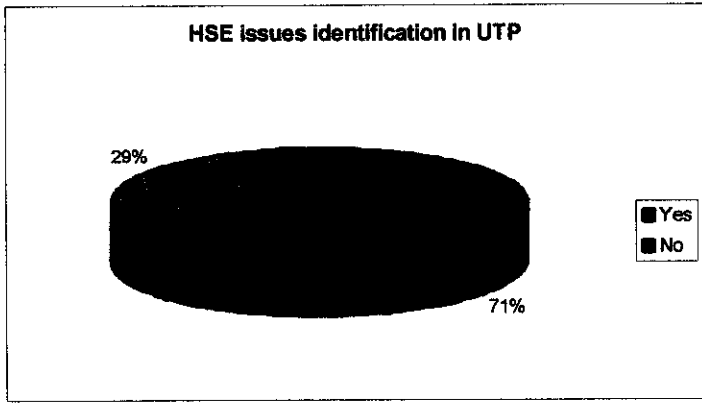


Figure 4.4: HSE issues identification in UTP

Figure 4.4 shows HSE issues identification in UTP. 71% of respondent identify HSE issues. Most students did not know how and where to issue reports. Based on interview done with HSE Committees, the report is currently share in the network and only UTP staff and lecturers are able to download it. Majority of student and staff agree with the UTP HSE System as it working online and capable to reach them as long as there was an Internet connection.

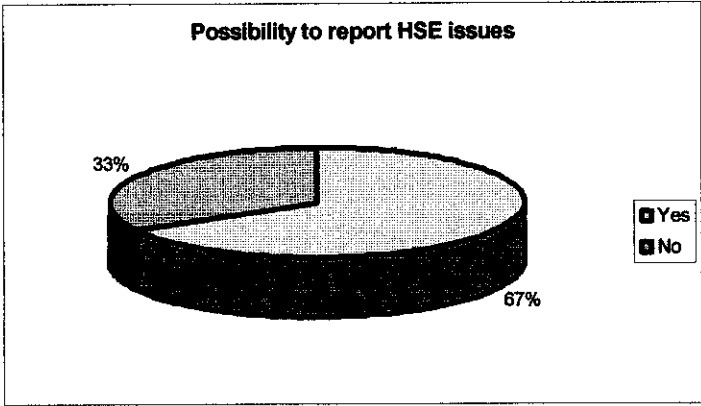


Figure 4.5: Possibility to report HSE issues

Figure 4.5 shows the possibility to report HSE issues happen in UTP. 67% of respondent will report any incidents and safety issues while another 33% are refuse to do that. Based on interview done with HSE Committees, the report is currently share in the network and only UTP staff and lecturers are able to download it.

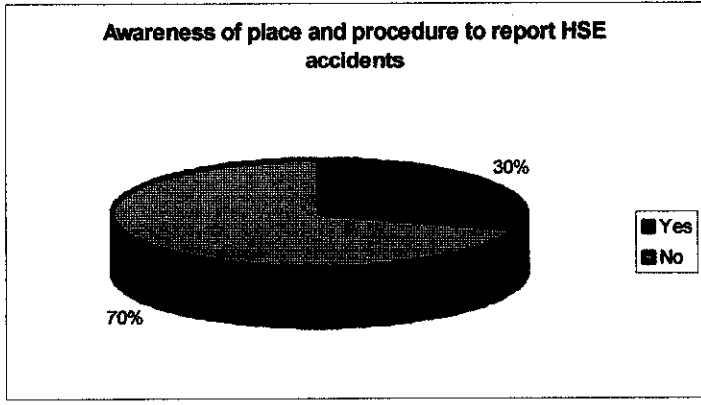


Figure 4.6: Awareness of place and procedure to report HSE incidents and accidents.

Figure 4.6 shows the level of awareness of place and procedure to report any HSE incidents and accidents happen in UTP. Unfortunately, only 30% of respondent know the place to report the safety issues. Most students do not know where exactly the HSE Committees office is located. As a result, if there is an issues regarding safety in campus, they tend to ignore it rather than report it to the right person.

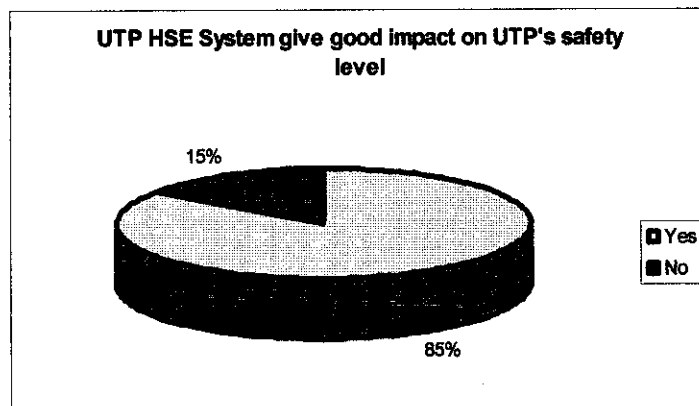


Figure 4.7: UTP HSE system benefits the user.

Figure 4.7 shows that the percentage of respondent who agreed whether the UTP HSE system benefits the UTP community or not. 85% of respondent agreed that the UTP HSE system will give some advantage and safety guidance towards reducing the number of HSE issues in UTP.

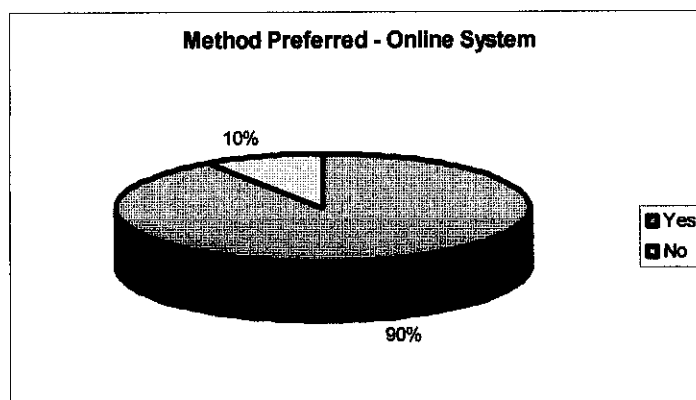


Figure 4.8: Online System as method preferred by user

Figure 4.8 shows the percentage of respondent who preferred the web based system as a medium to report HSE issues and incident happen in UTP. 90% of respondent, including UTP staff and students preferred to use the UTP HSE system rather than paper-based system as it working online and capable to reach them as long as there was an Internet connection.

#### **4.1.2 Interview**

On 20<sup>th</sup> April 2006, an interview session was conducted with Mr. Fuaddiriza, as representative of HSE Committees. Interview has been held at Chancellor Complex, Level 4. Many issues regarding HSE have been discussed with him during one hour session. Those issues are all about the HSE Reporting Procedure, Job Safety Analysis, and HSE scope in UTP as well as HSE current situation in UTP.

HSE Committee has release the HSE Incident Initial Report to allow staff, lecturers and student report incidents and HSE issues in UTP. The form is downloadable by staffs and lecturers through file sharing in UTP LAN network. The form can be open using Lotus Notes. Only staffs and lecturers who log in into UTP network can access the file sharing. Job Safety Analysis Form is purpose on safety analyzing of work or operation in UTP such as lab experiment and contractor projects. Despite of general information about job, this form also includes the sequence of basic job steps, potential accidents or hazards and recommended safe job procedure.



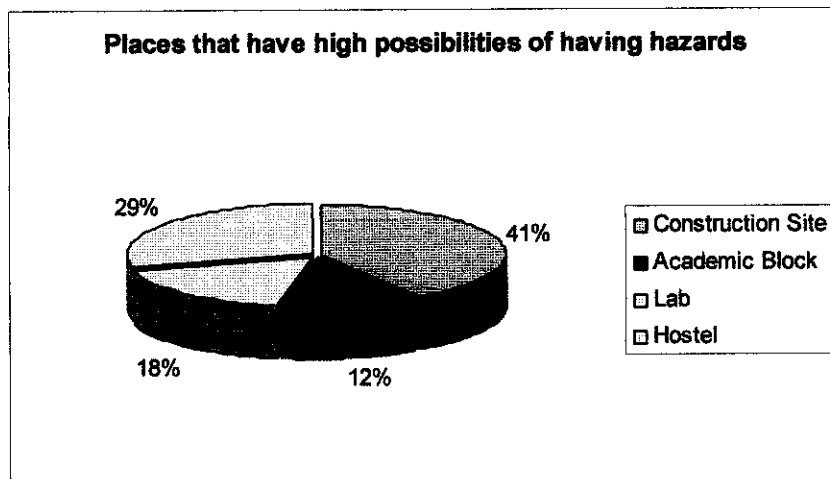


Figure 4:9: Places that have high possibilities of having hazards.

Figure 4.9 shows the places in UTP that have high possibilities of having hazards. Construction site shows the highest possibilities of having hazards, which is 41%, while, UTP academic block shows the lowest possibilities of containing hazards. HSE scope in UTP under HSE Committees observation are including hostel, construction site, canteen and cafeteria, academic block, and UTP road. As told by interviewer, total number of HSE cases recordable in UTP is still average and he not denied that it might be more cases that are not reported by student because of some misinformation about HSE reporting. One of the reasons might be the HSE reporting process is using paper-based system. Thus, he hoped that UTP HSE System can be a medium for student, staff and lecturer to report any incident and hazard occurs in campus surrounding so that it can improve the HSE level in the UTP environment.

### 4.1.3 SWOT Analysis

SWOT Analysis is a tool to identify strengths, weaknesses, opportunities and threats of a project, business or system. This analysis will evaluate the internal factors and external factors of the project, business or system in order to ensure its run smoothly and work properly.

A SWOT Analysis for current HSE manual system and UTP HSE system has been done based on questionnaires and interview session with UTP students and staffs. Below are results of SWOT Analysis.

<p style="text-align: center;"><b><u>Strength</u></b></p> <ul style="list-style-type: none"><li>• user friendly system for naïve use</li></ul>	<p style="text-align: center;"><b><u>Weakness</u></b></p> <ul style="list-style-type: none"><li>• not 24/7 operation</li><li>• paper-based methodology</li><li>• lagging time of taking action</li><li>• misplace report causing data lost</li></ul>
<p style="text-align: center;"><b><u>Opportunity</u></b></p> <ul style="list-style-type: none"><li>• the quantity of people who don't have enough skill to utilize computer and online system</li></ul>	<p style="text-align: center;"><b><u>Threats</u></b></p> <ul style="list-style-type: none"><li>• security issues ; privacy and confidentiality</li></ul>

Figure 4.10: SWOT Analysis for HSE manual system.

<p><b><u>Strength</u></b></p> <ul style="list-style-type: none"> <li>• user friendly system</li> <li>• operating 24/7</li> <li>• data kept in database</li> <li>• interactive</li> <li>• enhance the security of data</li> </ul>	<p><b><u>Weakness</u></b></p> <ul style="list-style-type: none"> <li>• system development is time consuming</li> <li>• need expertise to manage the system properly</li> </ul>
<p><b><u>Opportunity</u></b></p> <ul style="list-style-type: none"> <li>• Stable internet connection in UTP</li> <li>• each students, staffs and lecturer have own personal computer to access internet.</li> <li>• existence of Wi-Fi technology in UTP</li> </ul>	<p><b><u>Threats</u></b></p> <ul style="list-style-type: none"> <li>• security issues ; privacy and confidentiality</li> </ul>

Figure 4.11: SWOT Analysis of UTP HSE System

## 4.2 Discussion

### 4.2.1 Health, Safety and Environment

Managing health and safety required five steps to success. There are:

1. Set the health, safety and environment policy

The policy should influence all activities including the selection of people, equipment and materials, the way work is done and how its design and provide goods and services. The HSE policy and procedure is under the responsibility of HSE Committees.

2. Organize the people

To make the health, safety and environment worked, it is important to ensure that people in the organization involve and committed. Positive culture must be implemented. There are competence, control, co-operation and

communication. HSE Committees is always ensure that each UTP staff and contractors are fully prepared with basic safety learning through safety training organize by them.

### 3. Plan and set standards

Planning is the key to ensuring the health and safety efforts work. Planning for health and safety involves setting objectives, identifying hazards, assessing risk, implementing standards of performance and developing the positive culture. HSE Committees is always planning the best way to ensure that UTP is preserved with full of safety to ensure the security of the UTP communities itself.

### 4. Measure the performance

Active monitoring involves regular inspection and checking to ensure that the standards have been implemented and management controls are working. Reactive monitoring is more on lesson learned, whether it has resulted in injuries and illness, property damage and near misses. Previously, the HSE Committees use the paper based system in order to monitor and track the HSE level in UTP. The UTP HSE system is a web based system that will improve the safety quality in UTP for its availability, security and reliability.

### 5. Learn from experience

Audit is purposely on complement monitoring activities by looking whether the policy, organization and system have been achieved or not. It is all about reliability and effectiveness of the system itself. Lesson learned session and also the Ask an Expert session in UTP HSE system will user learned more about safety from real stories to reduce the possibility of repeating the same mistakes.

## 4.2.2 Implementing Knowledge Management

UTP HSE System is utilizing the concept of knowledge management which is creating, transfer and utilizes the knowledge regarding HSE through forum and discussion and HSE Archive. These knowledge systems can be best understood through the framework of the knowledge cycle.

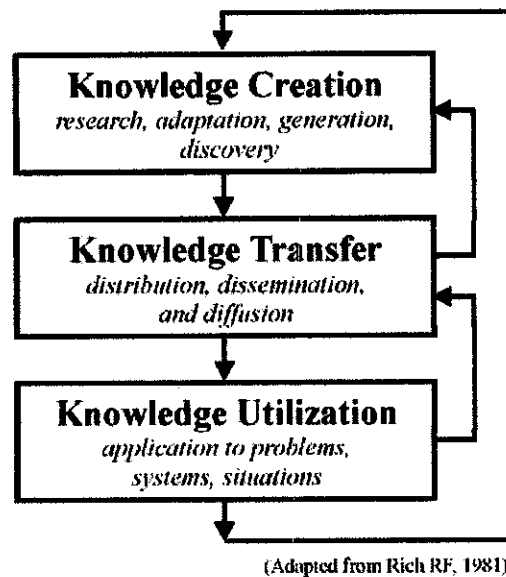


Figure 4.12: The knowledge cycle

Knowledge creation involves the research, adaptation, generation and discovery of knowledge. Knowledge transfer is the distribution, dissemination and diffusion of knowledge, while knowledge utilization is the application of knowledge to problems, systems and situations. Knowledge is fed forward as needs and gaps in existing knowledge are identified, while feedback occurs every time knowledge is applied and new knowledge is created. The knowledge cycle suggests this dynamic: new data create new information, which can lead to new knowledge; this then stimulates the need for new data and so forth.

Currently, HSE Committee using the manual system in order to monitor and track the safety level in UTP. To overcome the problem of availability and reliability, UTP HSE system, which an online system serve the best method in order to make people involve

informally with the safety of the UTP environment by reporting the HSE issues using HSE Online Reporting. Besides, the features included in this online system such as Lesson Learned, HSE Articles and Archives, Forum and Discussion and also Ask the Expert session will allow user to share knowledge and real stories about safety that happen in UTP and other Petronas Unit. This will make the process of safety learning become interesting and attractive to user.

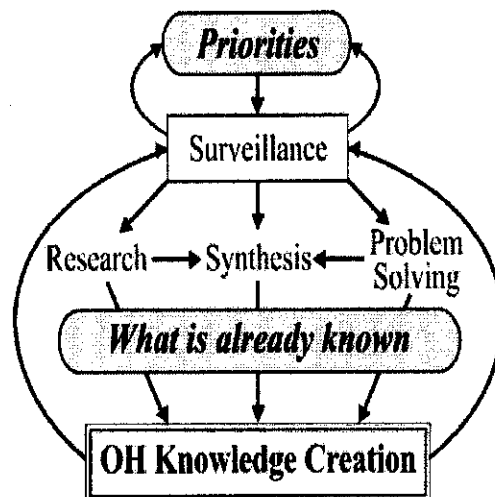


Figure 4.13: Occupational Hygiene Knowledge Creation

Figure 4.13 illustrates knowledge creation and the processes that lead to and from it in the occupational hygiene field. In this field, knowledge is created through three pathways: a research pathway, problem solving and a path that involves synthesizing information to make recommendations. Observation flows directly into the three pathways and is the process of collecting data, and analyzing and disseminating occupational safety and health information. It can occur at the plant, company or geographical level, and leads to recognition of a problem. For UTP HSE System, the data comes from HSE evaluation and assessment in UTP and also from other OPU. Because surveillance is the first step in all pathways of occupational safety and health knowledge creation, its place in the field of occupational safety and health is important.

Currently, the information about safety is spread up through sending emails to staffs and lecturers. The safety information are based on incidents and safety issues that happen in UTP and also at other Petronas unit that has been reported to HSE Committees and other HSE department. Unfortunately, this news is not reach students at all, besides, due to tight schedule, lecturers and staffs are tend to ignore and delete the email. In addition, emails in mailbox will automatically delete while it reach the capacity, which is 6MB. The UTP HSE system will display the HSE information and real stories in Lesson Learned session. User can share their reading text stories, videos and voice recording by submitting it to system administrator. This will make the process of learning become interesting and attractive.

#### 4.2.2.1 Knowledge Storage

Once knowledge is created it must reside somewhere. Knowledge storage is the function of standard operating procedures, company guidelines, textbooks, journal articles, databases, government documents, organizational publications, academic institutions, and websites.

**Knowledge Content**

<b>Knowledge Awareness</b>	<b>What we know we know (1)</b> <i>Occupational hygiene knowledge and information that is used, stored, transferred.</i>	<b>What we know we don't know (2)</b> <i>What we learn from research and surveillance; what we highlight by prioritizing, as in NORA.</i>
	<b>What we don't know we know (3)</b> <i>Tacit knowledge, distributed thru Occupational hygiene community.</i>	<b>What we don't know we don't know (4)</b> <i>New technology creates new hazards. This type 4 knowledge can be transformed to type 2, then 1. Different staffs focus on type 4 or type 1 knowledge.</i>

(Adapted from Drew S, 1999)

Figure 4.14: Pragmatic classification of occupational hygiene knowledge.

Figure 4.14 illustrates a way the knowledge stores can be assessed and classified. By classifying knowledge according to content and access, four categories result: (i) 'What we know we know' pertains to knowledge that is taught and practiced. (ii) The category 'knowing what we do not know' is what is targeted in efforts—to focus research to address knowledge gaps. (iii) 'Not knowing what we know' is an area of potential mistakes or problems. Finally, (iv) 'Not knowing what we do not know' represents a perennial area of philosophical exploration. In occupational hygiene, it represents the challenge of anticipating the conditions under which practitioners might operate in the future.

Using UTP HSE system, all reports, HSE real stories, and also threads in forum is saved in the database. Besides, those data stored are kept properly to ensure the security as well as the confidentiality. Those data kept in database must be easily retrieve back in order to spread the knowledge among the society.

#### **4.2.2.2 Knowledge Transfer**

The full value of knowledge comes from its transfer and utilization. The transfer of knowledge involves the distribution, dissemination and diffusion of information and knowledge. One of the knowledge transfer method is through internet. Increasingly, training and education as well as information and knowledge transfer in general are performed via the internet and virtually all organizations involved with occupational safety and health have websites. UTP HSE System is a web based system that consists of HSE Online Reporting, HSE Archive, HSE Articles and forum and discussion with search engine.

While the growth of the internet has fueled the growth of knowledge management practices, and knowledge management could not be easily accomplished without technology, simply using information technology does not wholly constitute knowledge management. Knowledge and information on the web requires resources and effort, because the material must be constantly maintained and updated.



Additionally, the function of a website over time may change. Some websites, such as the OSHA site, have expert systems that provide tailored knowledge to a requestor based on characteristics of a situation provided by that requestor.

HSE Archives implemented in UTP HSE System is used to list down the news, articles, issues and information regarding HSE. User, which is students, staffs and lecturers, will easily retrieve data using search engine and read the articles and issues provided. Besides, the Lesson Learned session will allow users to submit real stories contains of text with pictures, videos and voice recording regarding HSE issues and incidents happen in UTP environment. After those stories are filtered by system administrator, it will be uploaded in Lesson Learned session based on categories. Besides sharing knowledge, this interested session will help user learn something more about the important of HSE as well as reducing the possibilities to repeat the same mistakes.

### 4.2.2.3 Knowledge Utilization

Utilization of knowledge and information is intended to lead to prevention and control (Fig. 4.15). Knowledge is also used in occupational hygiene practice to influence decision makers, promote public awareness, and drive risk management.

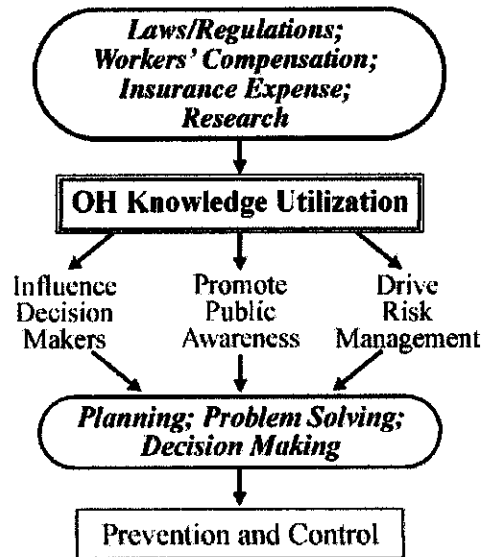


Figure 4.15: Occupational Hygiene Knowledge Utilization

Occupational hygiene knowledge is also put into use in problem solving situations, in planning, and in decision-making. Increasingly, workers themselves request to be actively involved in occupational safety and hygiene decisions and in training. As in UTP, once the evaluation done, the HSE Committees can map and making decision about future plan to improve HSE level in UTP. Based on interview that has been done with HSE Committees, they always involve in safety training and courses so that the safety requirement skills can be implement and apply in UTP. UTP HSE System is focused on knowledge sharing. User can upload file consists of real stories regarding HSE issues and incident happen in UTP and other Petronas Unit, so that the real stories can help telling the experiences when facing a crucial situation while handling with HSE issues.

## **4.2.3 Internet Forum with Search Engine**

### **4.2.3.1 Software features**

A forum is essentially a website composed of a number of member-written threads. Thread entails a discussion or conversation in the form of a series of member-written posts. These threads remain saved on the forum website for future reading indefinitely or until deletion by a moderator. However, forum software can be considerably more advanced. Forum software that will be used is an open source software.

UTP HSE System will implement forum and discussion feature in order to allow user which are students, staff and lecturers to post comments, opinion, latest issues and information regarding HSE issues happen in UTP surrounding. The forum and discussion is purposely to get people involve and sharing knowledge regarding HSE. Those comments, opinion, latest issues and information posted by user can be retrieving back using search engine. User can easily type keywords and the search engines will pull out and index words that appear to be significant. Finally, the words pull out by search engine will be displayed to user.

Most forum software allows more than one forum to be created. These forums are containers for threads started by the community. Depending on the permissions of community members as defined by the HSE Committees as board's administrator, they can post replies to existing threads and start new threads as they wish. Forum software can be broadly divided between those which allow visitors to post anonymously, and those which attribute posts to a registered username.

Mark Sharratt and Abel Usoro (2003) said, although lacking the richness of face-to-face dialogue, the benefit of online discussion forums is that the conversation becomes accessible to the whole of the community and can be archived and accessed by other members. The process of knowledge sharing involves the knowledge source using the online community system as a mechanism to effectively convey what they know.

For username-based software, visitors register using a username and a password, and possibly an e-mail address for validation purposes. In these types of forums, the users are often able to customize both how their posts display to others (for example avatars, user profiles and signatures) and how the board appears to them (such as different themes). Username-based software may provide for anonymity by allowing visitors to post without registration.

#### **4.2.3.2 Administrators and Moderators**

A forum administrator typically has the ability to edit, delete, move or otherwise modify any thread on the forum. Administrators also usually have the ability to close the board, change major software items, change the skin, modify the board, ban, delete, or create members. Moderator privileges are often able to be delegated to other forum members. Moderators usually help the Administrator (Admin), but have less ability, which may include editing, deleting, and moving threads, mass pruning, warning members for offenses, and changing minor forum details. The reasons for having these abilities are often to allow peace to be maintained and the rules to be enforced. As discussed with HSE Committees, the forum and discussion is good to be implemented as long as those comments, opinion, latest issues and information is filtered first by them before it is displayed to user. This is to ensure the clarity and accuracy of information as well as to guarantee the forum and discussion is working smoothly in circulating and sharing knowledge to UTP community.

#### **4.2.3.3 Members and Users**

Members of a forum, which is students, staffs and lecturers, usually have basic rights. They usually can post in threads, edit their posts and start new topics regarding HSE, and change their settings. User also can have a small picture located around their name, which is called an avatar. An avatar is a small picture that is chosen by the user to make the user profiles attractive. With that, anonymous user can see the details and background of the owner of the avatars by clicking the profile link for further details.

## 4.2.4 Diagram

### 4.2.4.1 Use Case Diagram

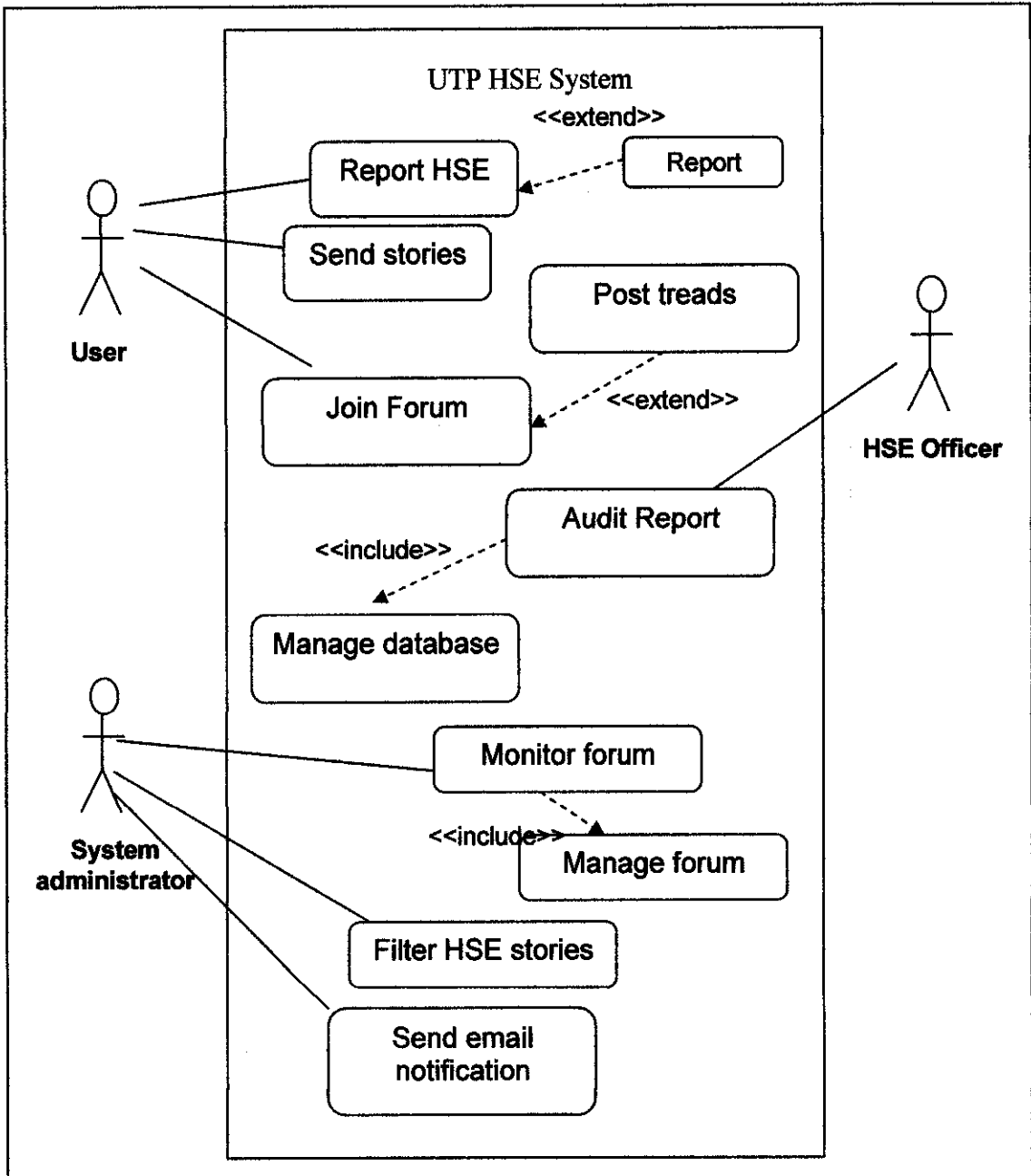


Figure 4.17: Use Case Diagram

Figure 4.17 shows the use case diagram of UTP HSE System. User, which is students, staffs and lecturers, can send HSE report through HSE online reporting. Besides, they can also join forum and discussion by posting new issues or threads regarding HSE. User also can send real stories about incident and safety information together with picture attachment, videos and voice record to system administrator. HSE Officer, which is the personnel from HSE Committees, will audit HSE report based that has been submitted from user. Besides, they also can manage the data saved in database in order to ensure the reliability and system effectiveness. The system administrator will be responsible in monitoring the forum and discussion by modifying, deleting and editing the threads post by user. Then, system administrator also need to filter all the real stories send by user in order to ensure its accuracy and privacy of company information before it is displayed in Lesson Learned session to be read by user. Lastly, system administrator will ensure that the system send email to user to notify them whether the report sent is delivered to be process or not. The email notification will be auto generated by system.

#### 4.2.4.2 Class Diagram

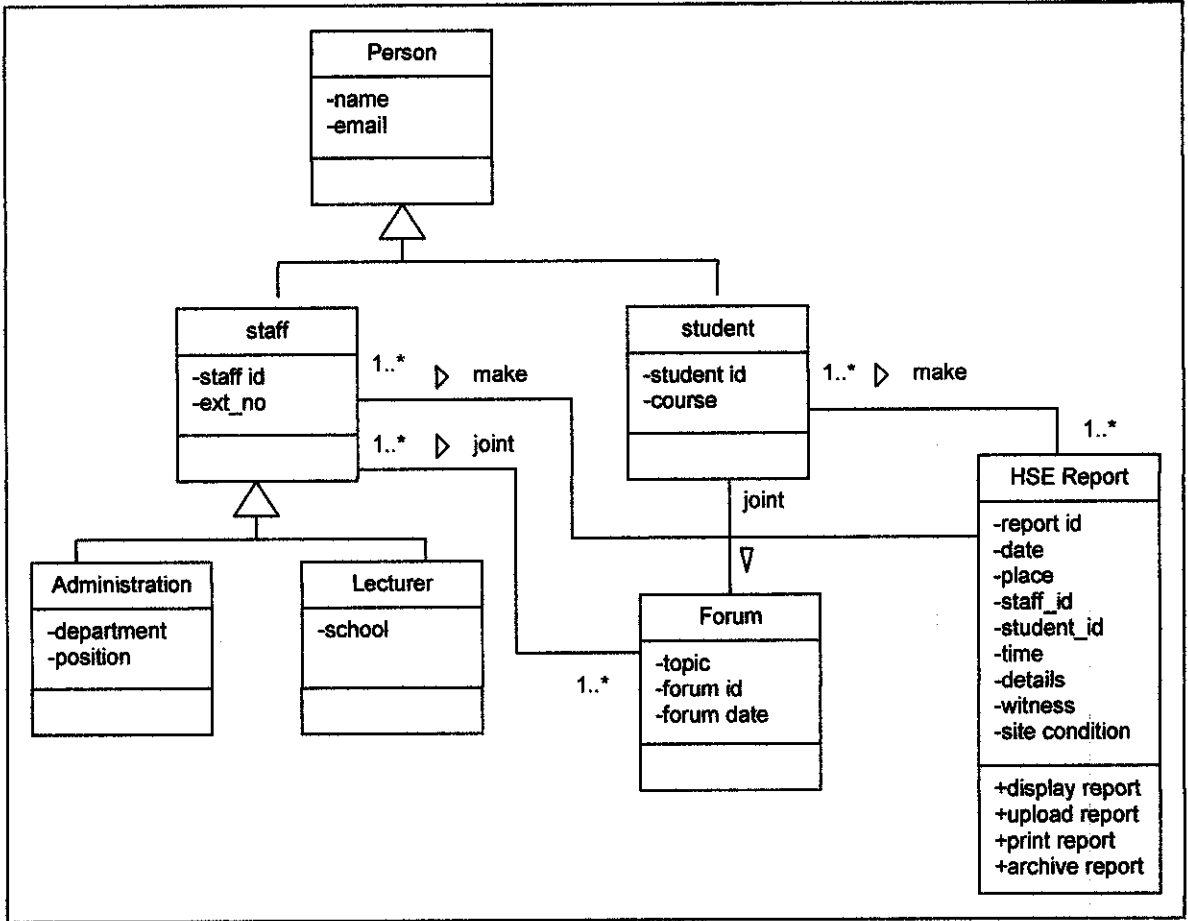


Figure 4.18: Class Diagram for UTP HSE System

Figure 4.18 shows the class diagram for UTP HSE system. From the diagram, the numbers of tables are 7, which is table for person, staff, student, HSE report, forum, lecturer and administration. Each table consists of attributes and methods to ensure the system run properly.

#### 4.2.4.3 Data Flow Diagram

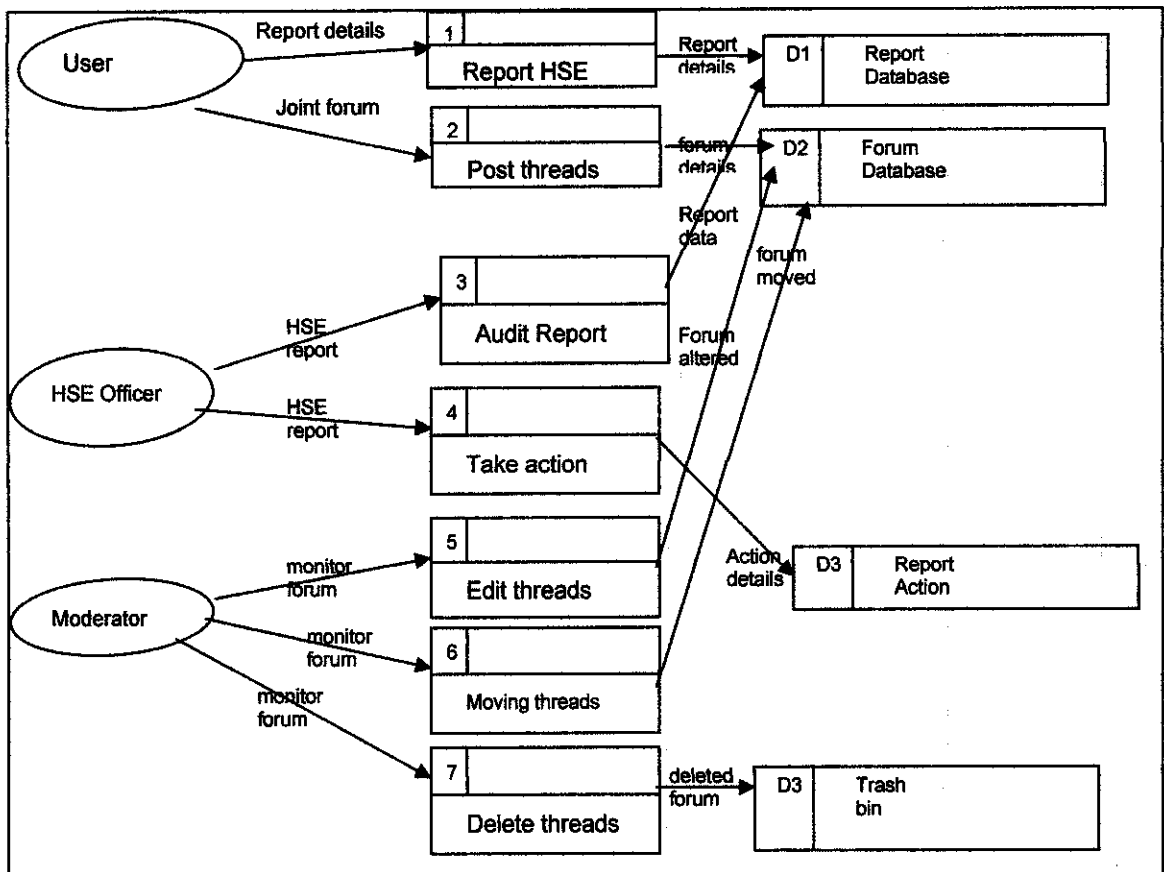


Figure 4.19: Data Flow Diagram for UTP HSE system

Figure 4.19 shows the data flow diagram for UTP HSE System. User will report HSE issues and report will be saved in report database. Besides, threads posted by user will be stored in forum database. For HSE Offices, report that has been audited will be saved in report database, while reports that has been took action are saved in report action database. Moderator or system administrator is responsible to edit threads and modify it before saved in forum database. Then, a thread that has been deleted is kept in database trash bin.



## 4.2.5 System Screenshot

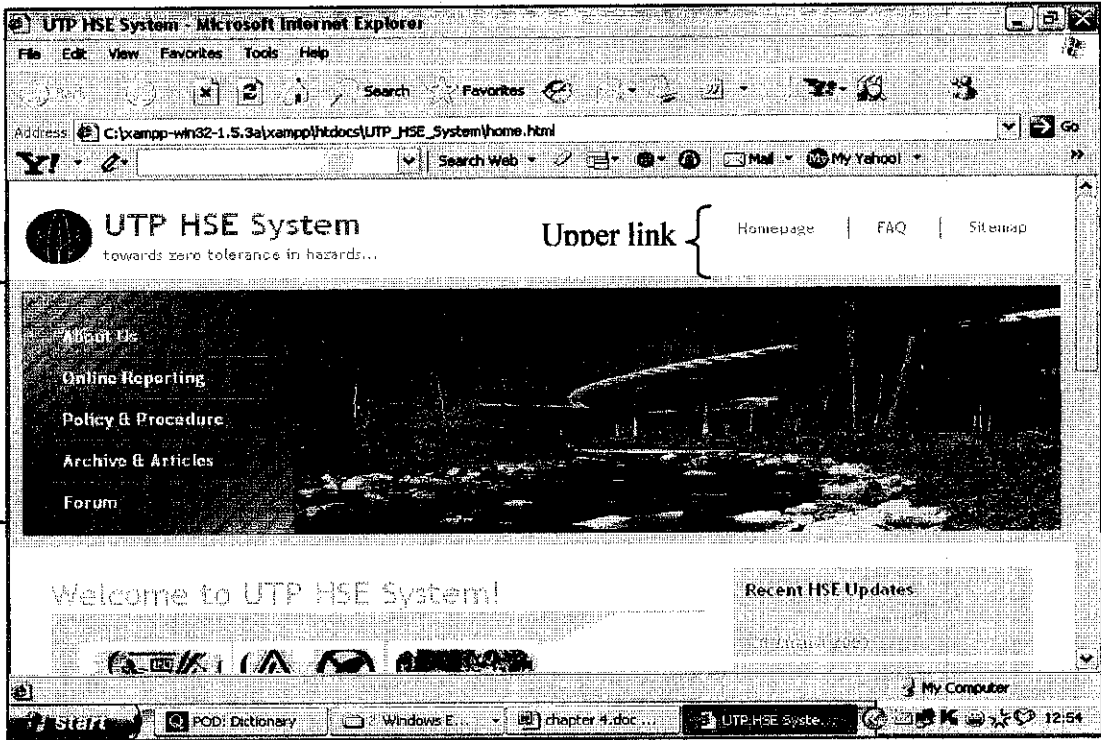


Figure 4.20: Frontpage of UTP HSE System

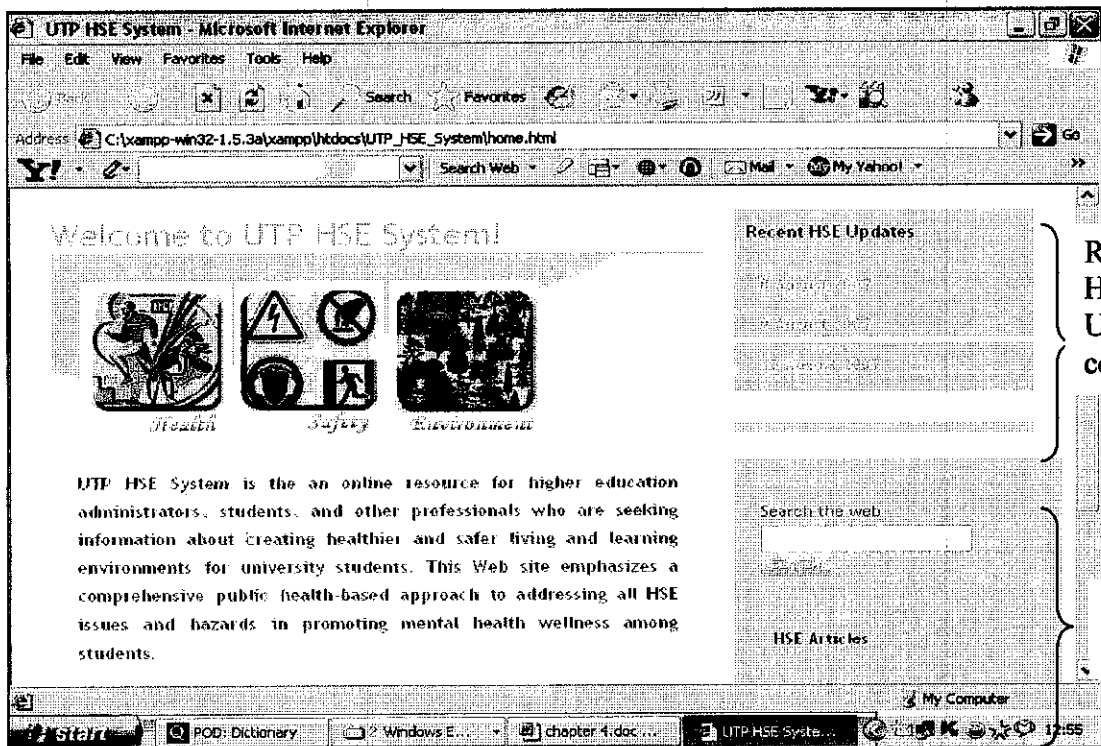


Figure 4.21: Welcoming Message



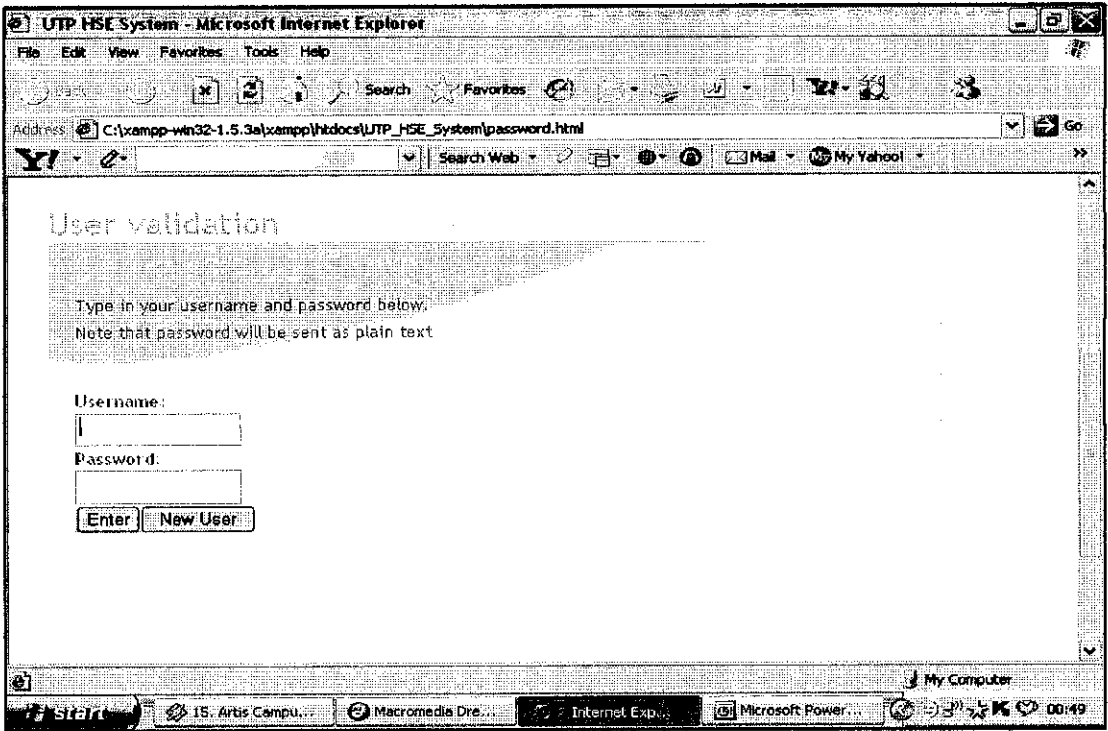


Figure 4.24: User Validation page

Figure 4.24 shows the page of User Validation. User can enter username and password before reporting and create new account.

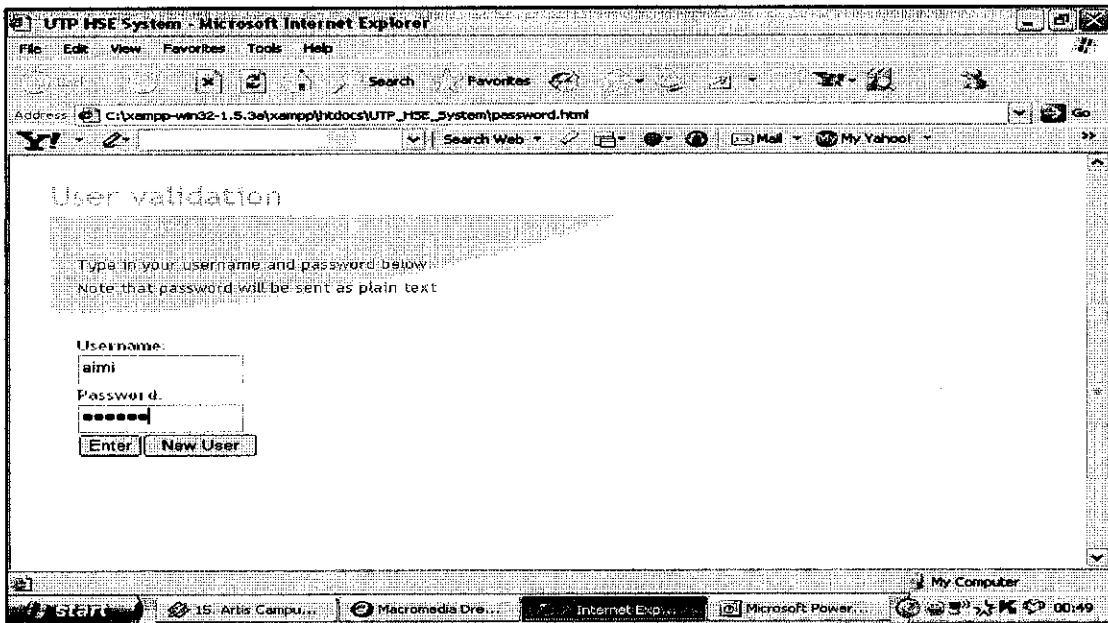


Figure 4.25: Username and password entered

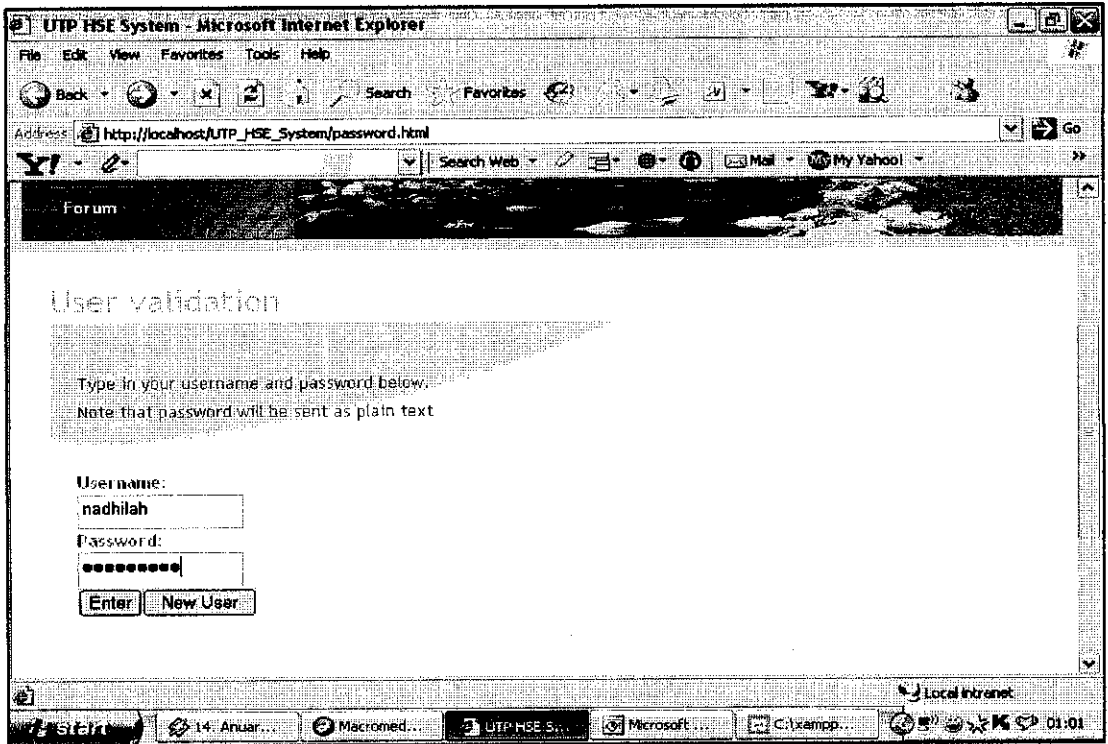


Figure 4.26: Create new account

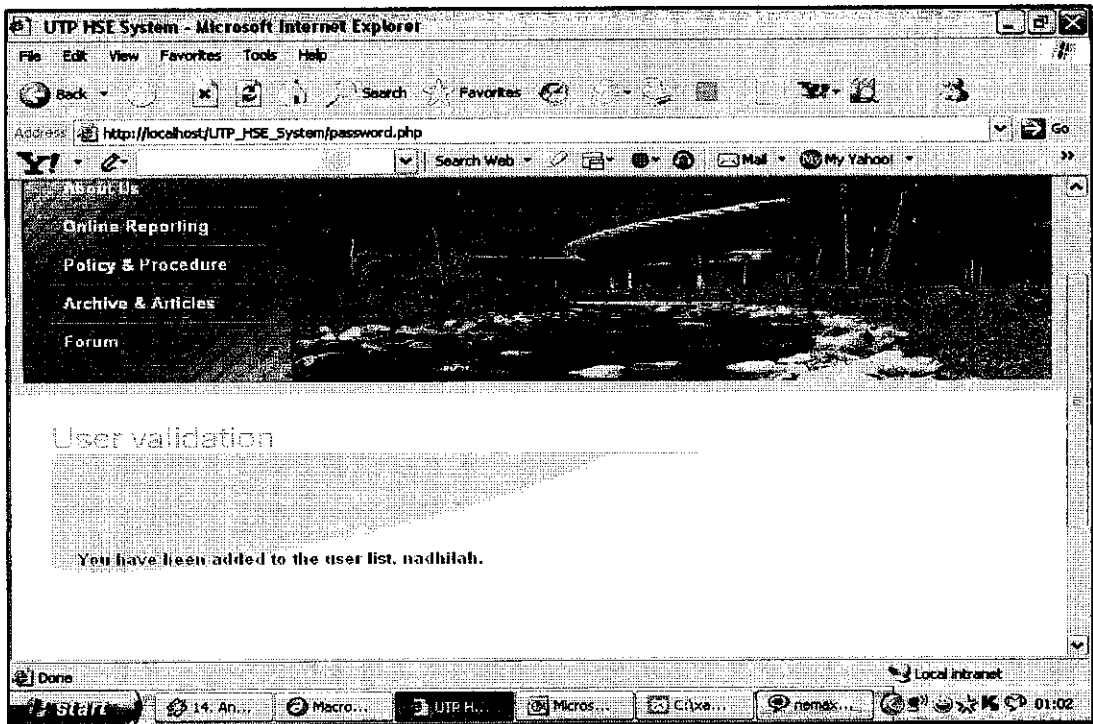


Figure 4.27: New account validated

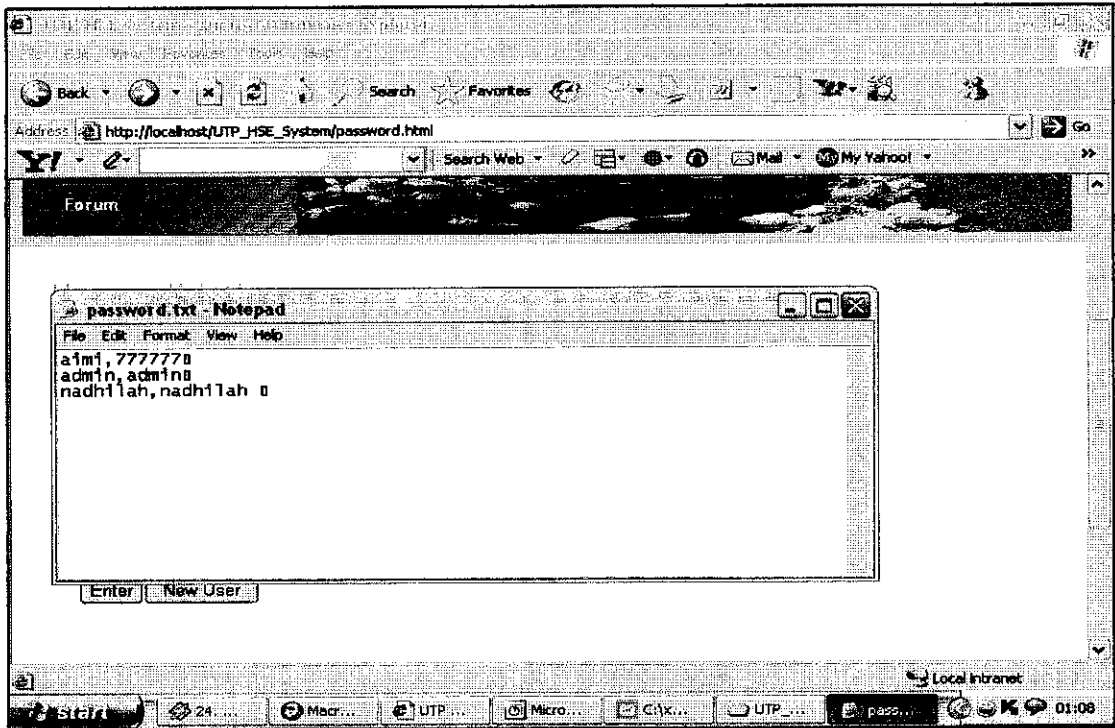


Figure 4.28: File of user account

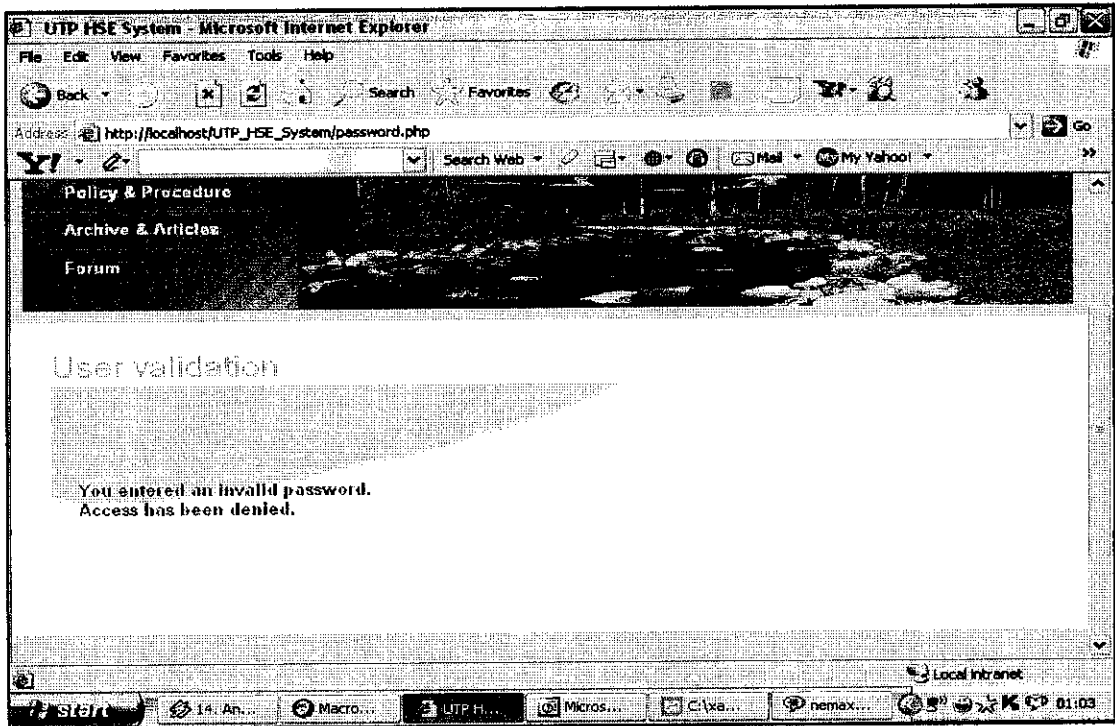


Figure 4.29: Message of invalid password

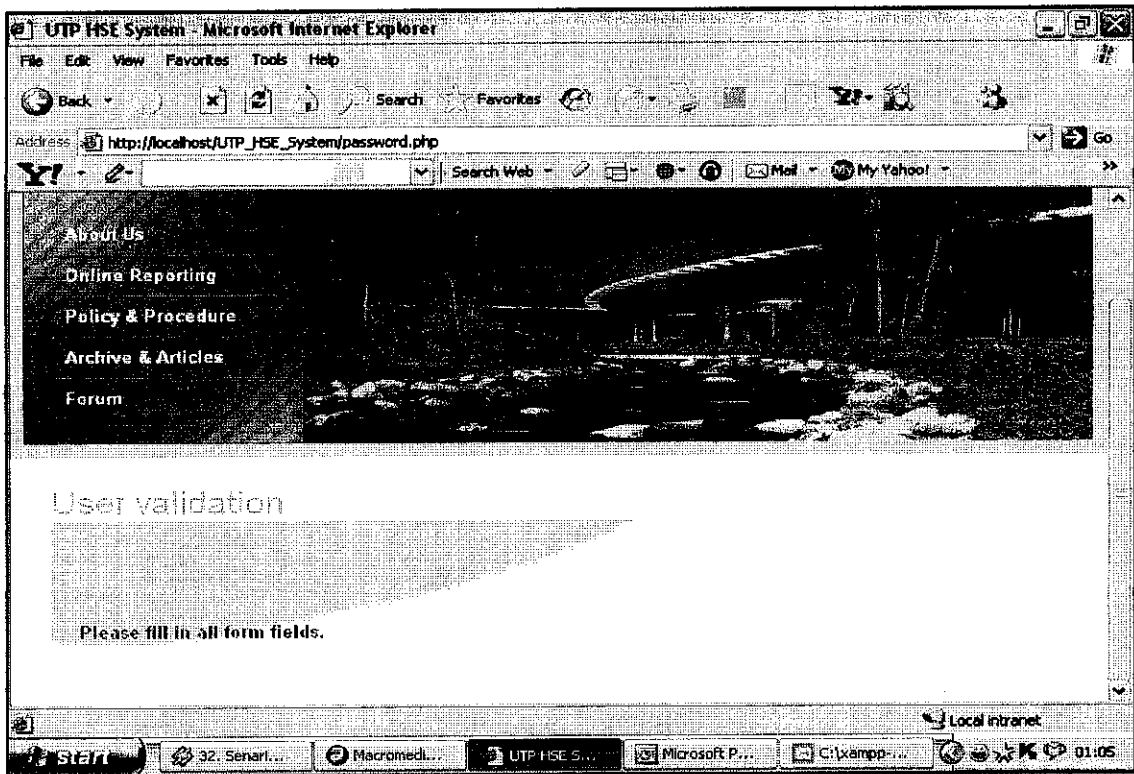


Figure 4.30: Message of empty fields

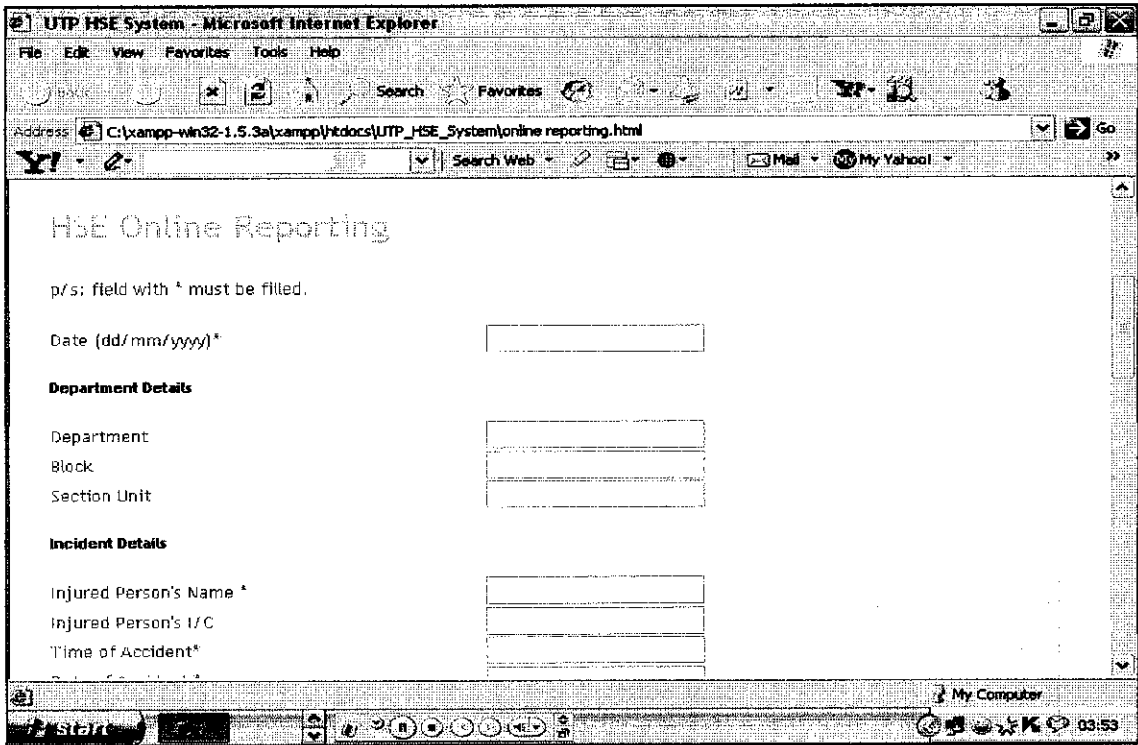


Figure 4.31: Online Reporting viewed by user

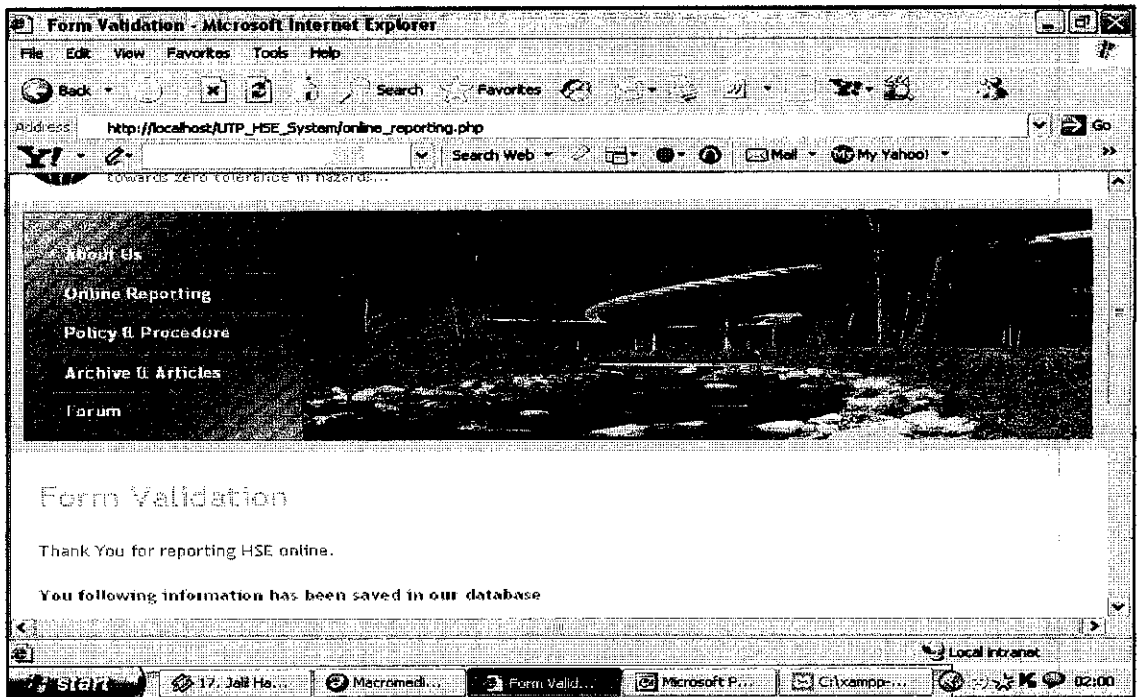


Figure 4.32: Report saved in database

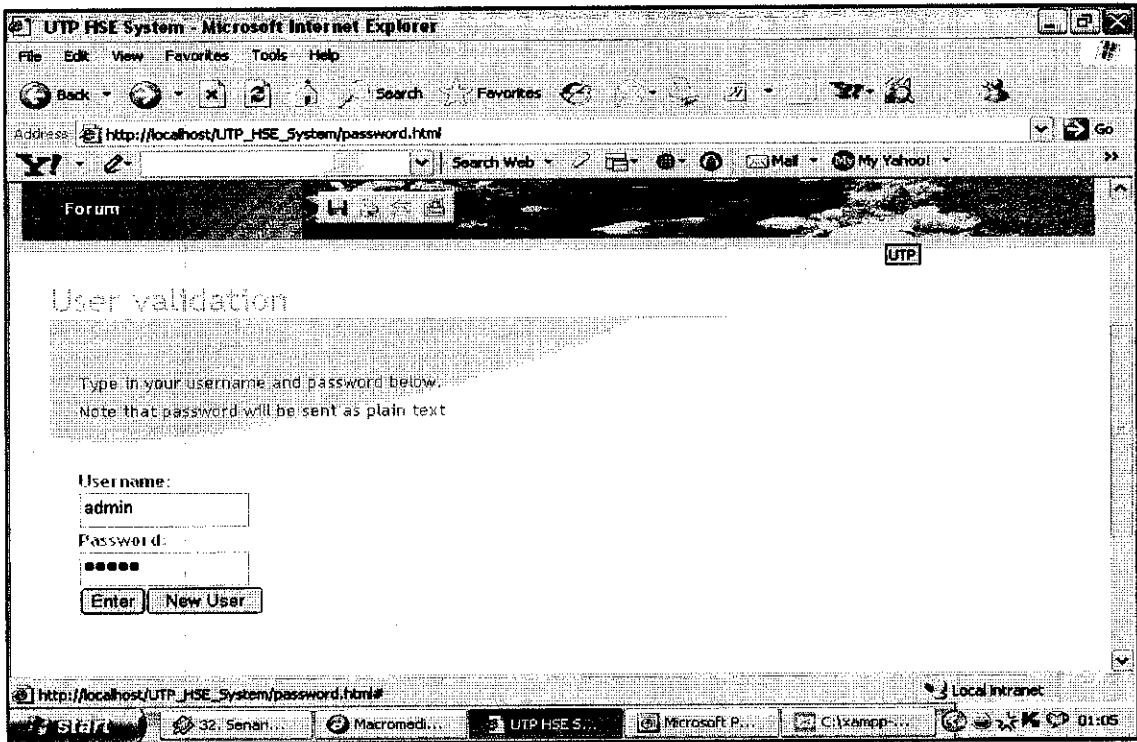


Figure 4.33: Page for admin account

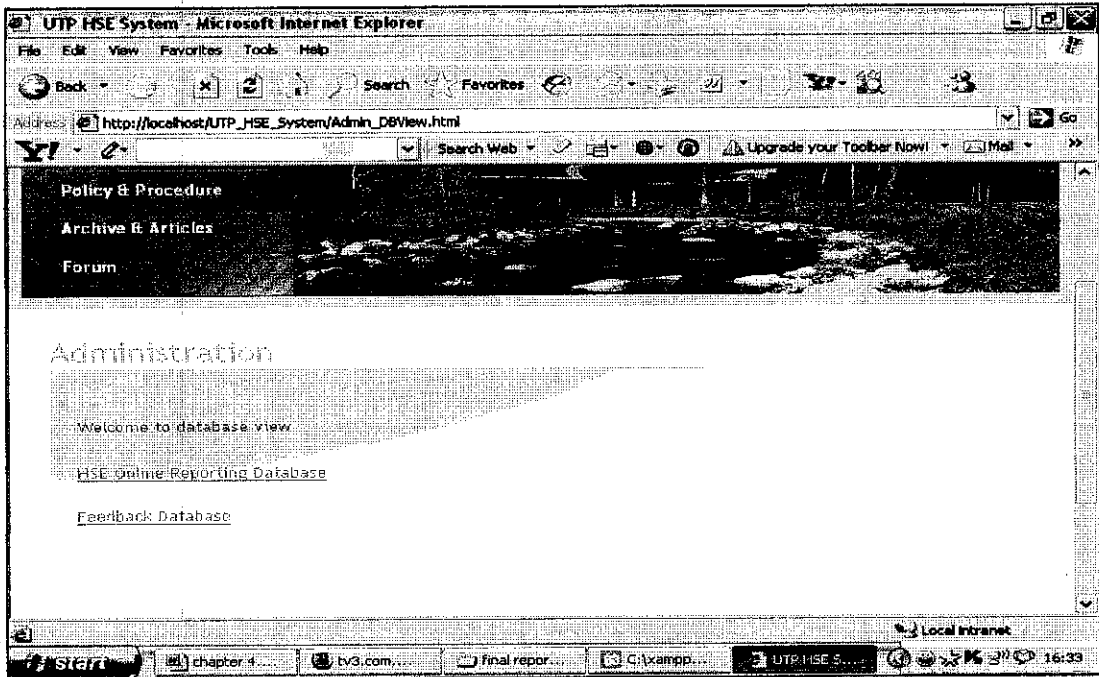


Figure 4.34: Database viewed by admin



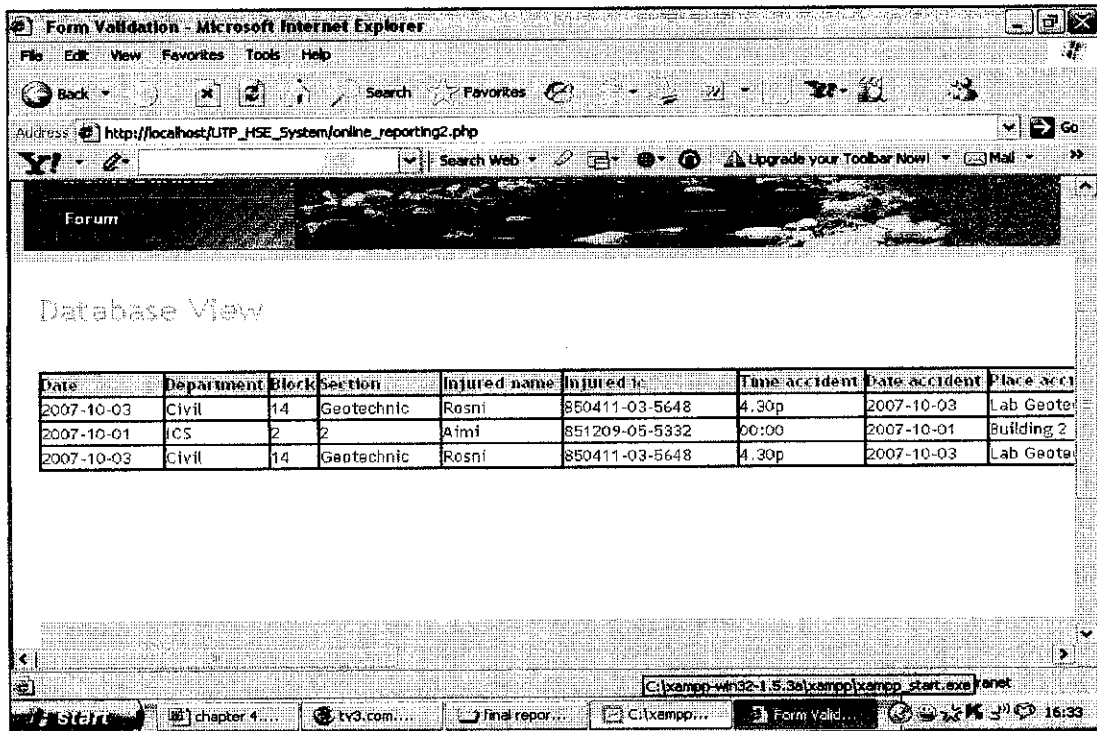


Figure 4.35: Report details

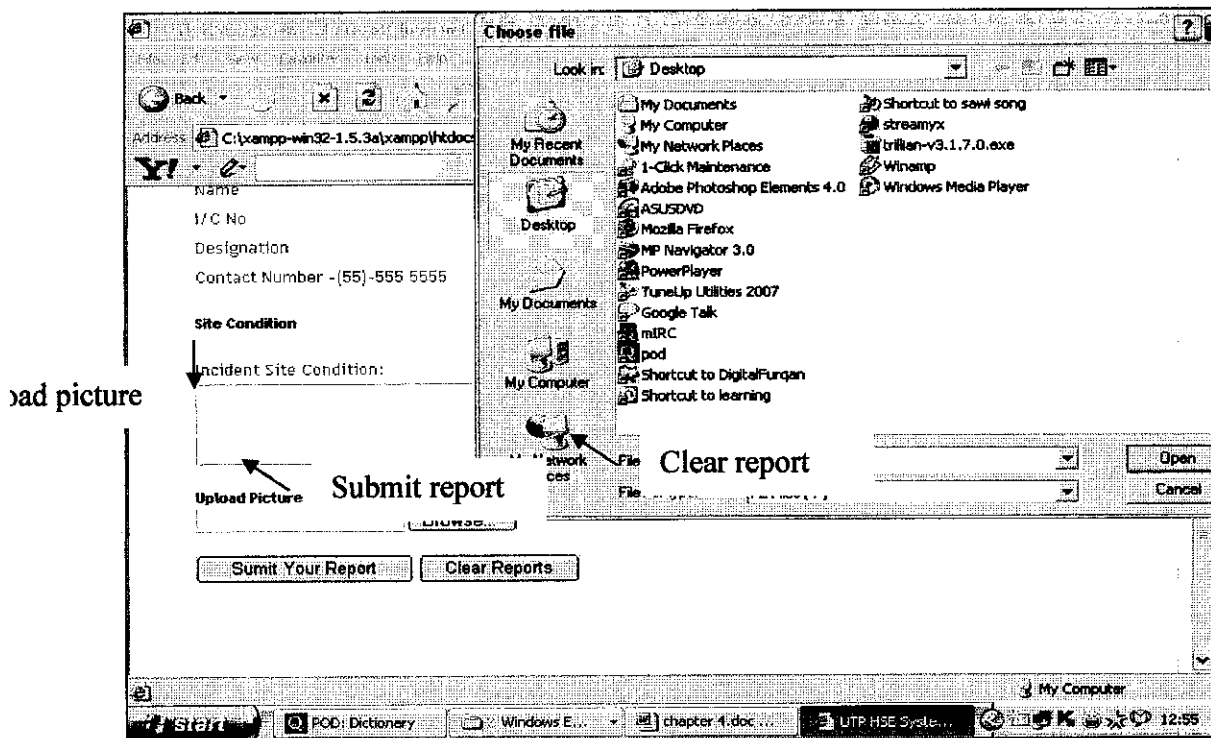


Figure 4.36: Buttons in HSE Online Reporting

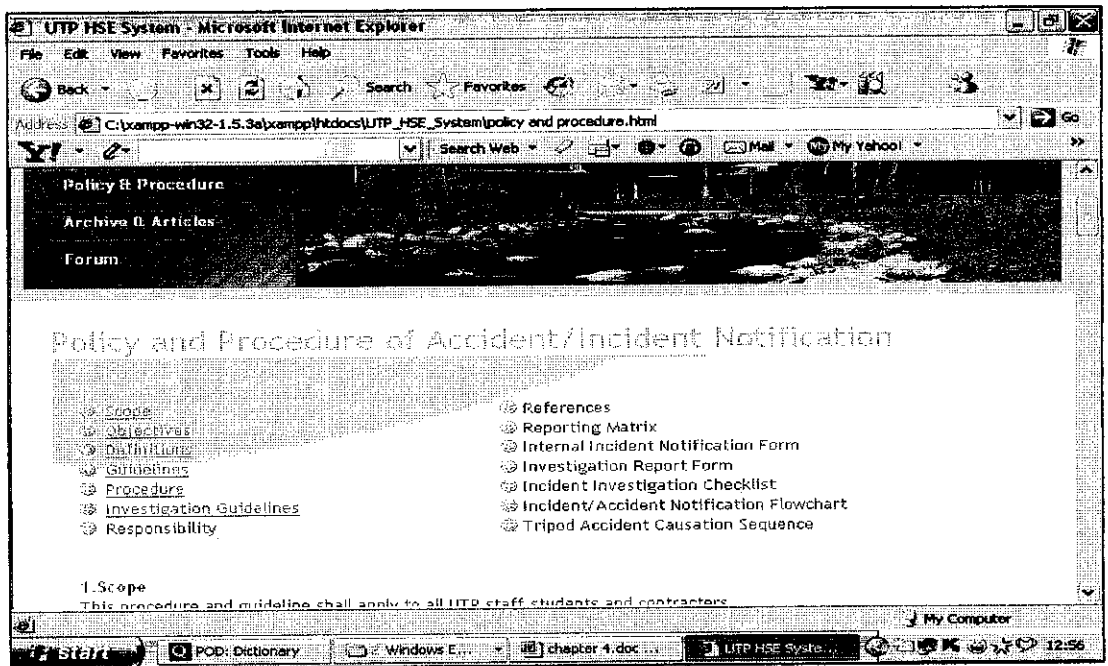


Figure 4.37: Policy and Procedure of Accident

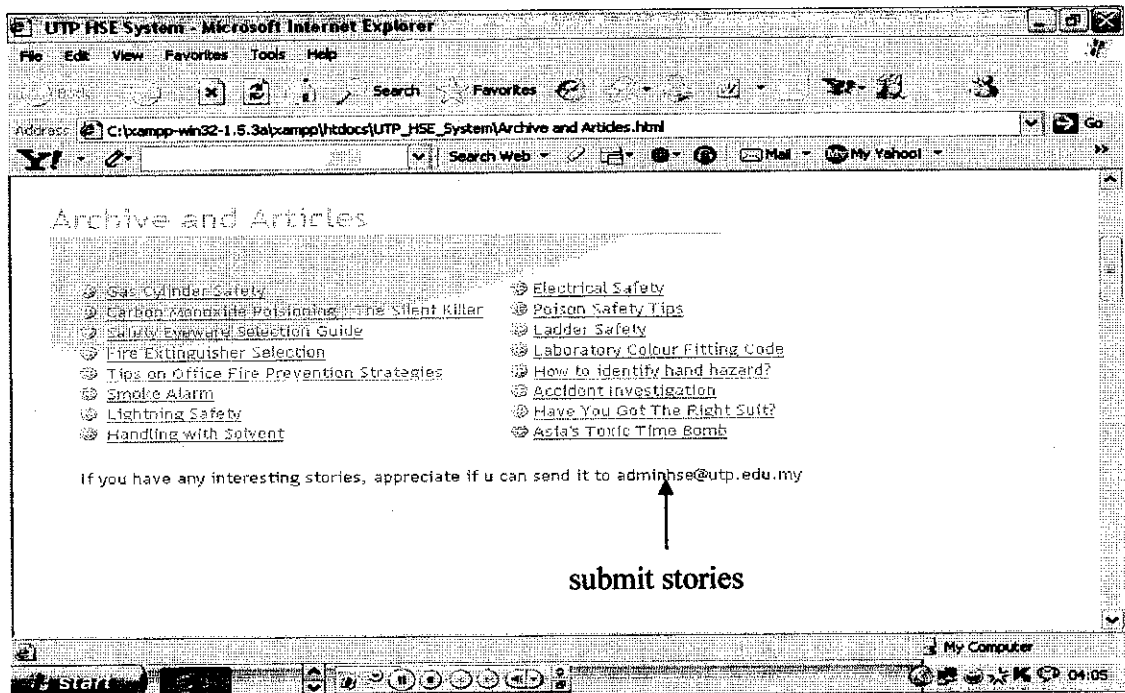


Figure 4.38: Upload stories

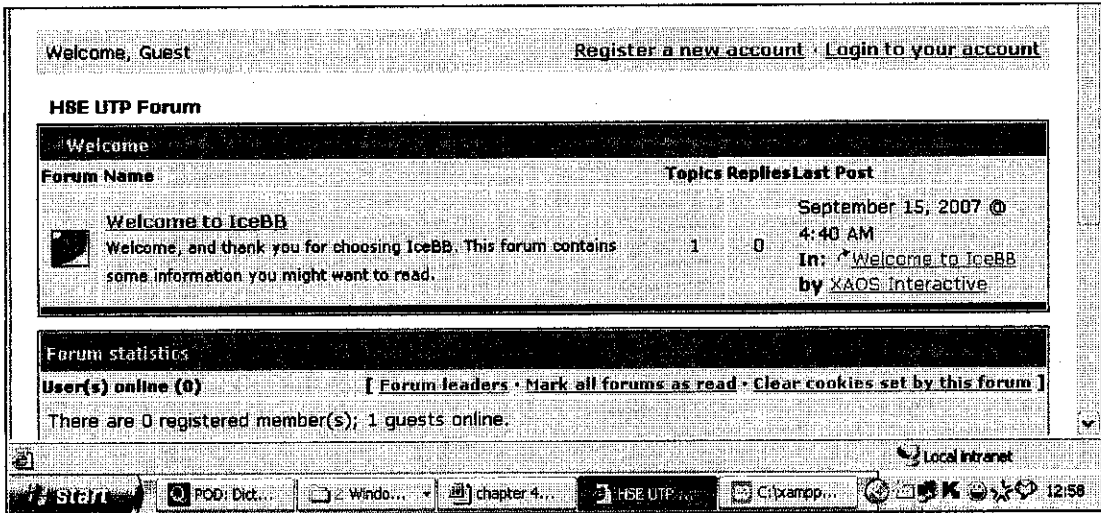


Figure 4.39: Internet Forum Front Page

## **CHAPTER 5**

### **CONCLUSSION AND RECOMMENDATION**

#### **5.1 Conclusion**

As a conclusion, the UTP HSE System that will be implement will allow user which is students, staffs and lecturers in reporting HSE issues parallel to the objective of the system.

The UTP HSE System will include additional features which are HSE Archive, HSE Reporting, internet forum with search engine and HSE Articles. HSE Online Reporting is a feature that will meet the main objective of this project, which is to allow user to report HSE issues and incident online. UTP HSE System will implement knowledge sharing culture by sharing issues, news, articles and comments using HSE Archive and internet forum with search engine. Besides, there is a lesson learned session that allow user to send real stories regarding HSE issues to system administrator before it will be uploaded to be read by user.

The UTP HSE system is a web based system that will improve the manual system in terms of availability, security and reliability. The articles and stories submitted by user are saved in database and can be read by user. The internet connection will make the system operated 24/7. This will help the system functions successfully.

## **5.1 Recommendation**

Based on the system objective, there are some recommendations for future work. Here are the recommendations:

- Further studies and research about MMS application to allow user sending messages consists of pictures and videos rather than using picture attachment during online HSE Reporting.
- Discover the best way to implement forum and discussion with search engine using open source. Besides, further study about forum and discussion should be done to ensure the features working smoothly.
- Ask the Expert session in order to allow user to ask questions to the expert, which is the HSE personnel from HSE Committees.
- Email auto-generated in order to notify user who submit HSE online reporting whether the report has been delivered to system administrator to be processed or not.
- Include pictures attachment during HSE online reporting

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## Appendix A

### Questionnaires and Surveys

#### Final Year Project 1

#### System: Health, Safety and Environment System

This questionnaire forms part of a study regarding to my Final Year Project. The title of my project is Health, Safety and Environment System. The aim of this questionnaire is to gather information about the awareness and understanding of the risks and hazards in UTP surrounding. The information that you provide is very valuable, and will be used by as one of my research and study regarding the urgency of having a Health, Safety and Environment System in UTP. This system's objective is to help in increasing and enhancing the HSE level and quality in our campus. All the information that you provide on this questionnaire will remain strictly confidential and will only be used for the purposes of this study.

I hope you feel able to take part in this study. Your cooperation is highly appreciated. Thank you in advance.

#### Demographic Questionnaires

- 1 Age :
- 2 Gender :  Male  Female
- 3 Course :
  - Information System
  - Information Technology
  - Mechanical Engineering
  - Civil Engineering
  - Chemical Engineering
  - Electrical and Electronic Engineering
  - Petroleum Engineering
  - Other. Please specify: \_\_\_\_\_
- 4 Year :

5 Level of Study :

Postgraduate

Undergraduate

Foundation

Others : Please specify : \_\_\_\_\_

6 Races :

Malay

Chinese

Indian

Others

Please specify: : \_\_\_\_\_

### **Research Question**

1 Are you aware about Health, Safety and Environment (HSE) issues in UTP ?

Yes

No

2 Are you aware the existence of Health, Safety and Environment (HSE) Communities in UTP?

Yes

No

3 Have you taken the Health, Safety and Environment subject?

Yes

No

4 Have you been provided with any information regarding Health, Safety and Environment Policies and Procedure?

Yes

Please specify the source of information :

No

5 Have you ever identified any HSE issues and elements in UTP?

Yes

Please specify the location : \_\_\_\_\_

No

6 Where is/ are the most place/ places did you find hazards in UTP? You can select more than one answer.

Hostel

Academy Blocks

Café and canteen

Construction Site

Library

Parking Lots

Others

Please specify :

7 If there was an HSE incident, will you take an action by reporting that issues?

Yes

No

8 Do you know where and how to report the Health, Safety and Environment elements and hazards?

Yes

No

9 What do you believe were the main causes of hazards and HSE elements?

Unsafe work practices in construction site

Poor training and information regarding Health, Safety and Environment

Unsafe work and lab equipment

Lack of HSE issues awareness and expose

Other

Please specify :

10 Will Health, Safety and Environment System help the UTP community; lecturers, student and employees, in improving and increasing the HSE quality in campus?

Yes

Specify the reason :

No

11 Method preferred to report HSE incidents and elements

Paper-based system (Manual System)

Online system

If you choose online system, please specify the reason :

12 Please list down hazards found in places stated below :

a) Hostel

b) Academy Blocks

c) Café and canteen

d) Construction Site

e) Library

f) Parking Lots

g) Roads in UTP

**-End of Page-**

**Thank You**

## Appendix B



### Incident Initial Report

Department/Program:	Block:	Section/Unit:	Reported By: <i>(Name)</i>
---------------------	--------	---------------	-------------------------------

Name of Injured Person:	I/C No:	Time of Incident:	Date:	Place of Incident:
-------------------------	---------	-------------------	-------	--------------------

Nature of Incident: <i>(Please tick)</i>	Work Accident	Asset Damages	Occupational Diseases	Environmental Damages	Others:
---	---------------	---------------	-----------------------	-----------------------	---------

Details of Incident:

<p>Witness 1.</p> <p>Name: _____</p> <p>I/C No: _____</p> <p>Designation: _____</p> <p>Contact Number: _____</p>	<p>Witness 2.</p> <p>Name: _____</p> <p>I/C No: _____</p> <p>Designation: _____</p> <p>Contact Number: _____</p>
--	--

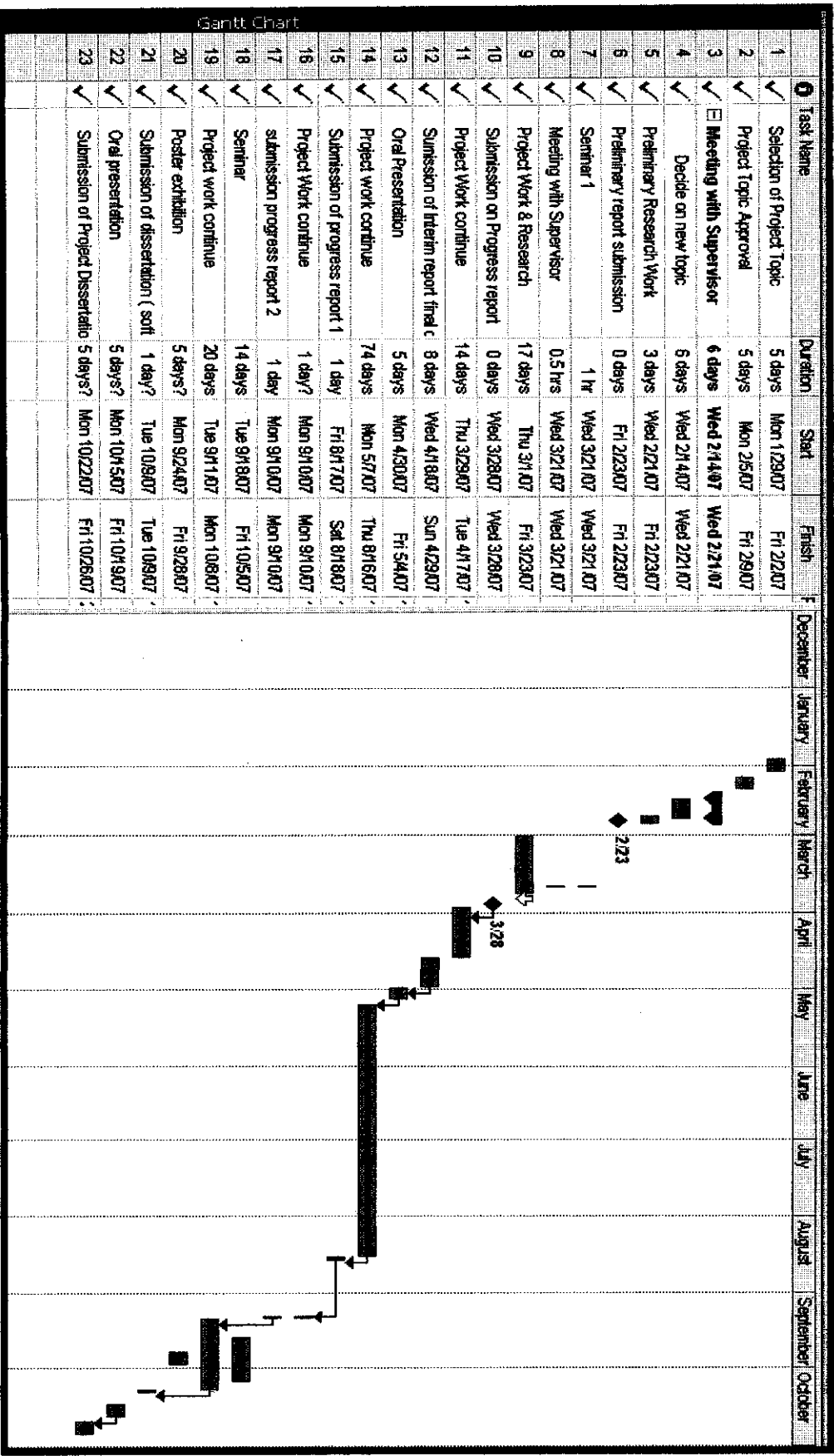
Incident Site Condition:

Signature: \_\_\_\_\_

Name: \_\_\_\_\_

- Distribution:
1. Rector/Directors/Program Heads/ Department Managers. *(please tick)*
  2. Attach Statements / Sketches / Drawing where necessary

# Appendix C. Gantt chart



## Appendix D-1

### About Us page

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Strict//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-strict.dtd">
<!--

-->
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
<meta http-equiv="content-type" content="text/html; charset=utf-8" />
<title>UTP HSE System</title>
<meta name="keywords" content="" />
<meta name="description" content="" />
<link href="policy and procedure css.css" rel="stylesheet" type="text/css" />
</head>
<body>
<div id="header">
  <div id="logo">
    <h1><a href="#">UTP HSE System</a></h1>
    <h2><a href="http://www.freecsstemplates.org/"> towards zero tolerance
in hazards... </a></h2>
  </div>
  <div id="topmenu">
    <ul>
      <li class="first"><a href="home.html">Homepage</a></li>
    </ul>

  </div>
</div>
<div id="header2">
  <div id="menu">
    <ul>
      <li class="first"><a href="About Us.html">About Us </a></li>
      <li><a href="password.html">Online Reporting </a></li>
      <li><a href="policy and procedure.html"> Policy &
Procedure </a></li>
      <li><a href="Archive and Articles.html">Archive &
Articles
</a></li>
      <li><a href="http://localhost/icebb/index.php">Forum</a></li>
    </ul>
  </div>
  <div id="splash"><a href="#"></a></div>
</div>
```



```

<hr />
<div id="page">
  <div id="content">
    <div>
      <h1 class="title">About HSE Comittees </h1>
      <div class="content">
        <table width="683" border="0" cellspacing="0" cellpadding="0">
          <tr>
            <td colspan="4"><div align="left">
              <p align="left"><strong>HSE Committee</strong></p>
            </div></td>
          </tr>
        </table>
        <div>
          <table width="683" border="0" cellspacing="0" cellpadding="0">
            <tr>
              <td>Key Functions </td>
            </tr>
            <tr>
              <td><ul>
                <li>
                  <div>Implement HSE guidelines &#13;</div>
                <div></div>
              </li>
            </ul></td>
            <tr>
              <td><ul>
                <li>
                  <div>Provide information and conduct activities on HSE&#13;</div>
                <div></div>
              </li>
            </ul></td>
            <tr>
              <td><ul>
                <li>
                  <div>Provide HSE support and services through HSE Committee and
HSE activities&#13;</div>
                <div></div>
              </li>
            </ul></td>
          </table>
        </div>
      </div>
    </div>
  </div>
</div>

```



## Appendix D-2

### Password page

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Strict//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-strict.dtd">
<!--

-->
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
<meta http-equiv="content-type" content="text/html; charset=utf-8" />
<title>UTP HSE System</title>
<meta name="keywords" content="" />
<meta name="description" content="" />
<link href="policy and procedure css.css" rel="stylesheet" type="text/css" />
</head>
<body>
<div id="header">
  <div id="logo">
    <h1><a href="#">UTP HSE System</a></h1>
    <h2><a href="http://www.freecsstemplates.org/"> towards zero tolerance
in hazards... </a></h2>
  </div>
  <div id="topmenu">
    <ul>
      <li class="first"><a href="home.html">Homepage</a></li>
    </ul>

  </div>
</div>
<div id="header2">
  <div id="menu">
    <ul>
      <li class="first"><a href="About Us.html">About Us </a></li>
      <li><a href="password.html">Online Reporting </a></li>
      <li><a href="policy and procedure.html"> Policy &
Procedure </a></li>
      <li><a href="Archive and Articles.html">Archive & Articles
</a></li>
      <li><a href="http://localhost/icebb/index.php">Forum</a></li>
    </ul>
  </div>
  <div id="splash"><a href="#"></a></div>
</div>
<hr />
```

```

<div id="page">
  <div id="content">
    <div>
      <h1 class="title">User validation </h1>
    <div class="content">
      <p>
        Type in your username and password below.
      <br/>
      Note that password will be sent as plain text
      </p>
      <form action="password.php" method="post">
        <br/>
        <table border="0" cellpadding="0" cellspacing="0"
style="height:90px; width:123px; font-size:10pt">

          <tr>
            <td colspan="3">
              <strong>Username:</strong></td></tr>

          <tr>
            <td colspan="3">
              <input size="40" name="USERNAME"
style="height:22px; width:115px"/>
            </td>
          </tr>

          <tr>
            <td colspan="3">
              <strong>Password:</strong></td></tr>

          <tr>
            <td colspan="3">
              <input size="40" name="PASSWORD"
style="height:22px; width:115px"
type="password"/>
            <br/></td>
          </tr>

          <tr>
            <td colspan="1">
              <input type="submit" name="Enter" value="Enter"
style="height:23px; width:47px"/>
            </td>

            <td colspan="2">
              <input type="submit" name="NewUser" value="New User"
style="height:23px"/></td></tr></table></form>

```

```

    For admin, click <a href="password_admin.html">here</a> </div>
  </div>
  <div class="twocols"></div>
</div>
<div style="clear: both;">&nbsp;</div>
</div>
<hr />
<div id="footer-wrapper">
  <div id="footer">
    <p id="legal">Copyright &copy; 2007 UTP HSE System. All Rights Reserved<br />
      Designed by webmaster: Aimi Diyana Zali </p>
    <p id="links"><a href="#">Homepage</a> | <a href="#"> FAQ</a> | <a
href="http://validator.w3.org/check/referer" title="This page validates as XHTML 1.0
Transitional"><abbrev>Site Map </abbrev></a> | <a href="http://jigsaw.w3.org/css-
validator/check/referer" title="This page validates as CSS"><abbrev>Petronas Link
</abbrev></a></p>
  </div>
</div>
</body>
</html>

```

## Appendix D-3

Password.php

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Strict//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-strict.dtd">
<!--

->
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
<meta http-equiv="content-type" content="text/html; charset=utf-8" />
<title>UTP HSE System</title>
<meta name="keywords" content="" />
<meta name="description" content="" />
<link href="policy and procedure css.css" rel="stylesheet" type="text/css" />
</head>
<body>
<div id="header">
  <div id="logo">
    <h1><a href="#">UTP HSE System</a></h1>
    <h2><a href="http://www.freecsstemplates.org/"> towards zero tolerance
in hazards... </a></h2>
  </div>
  <div id="topmenu">
    <ul>
      <li class="first"><a href="home.html">Homepage</a></li>
    </ul>

  </div>
</div>
<div id="header2">
  <div id="menu">
    <ul>
      <li class="first"><a href="About Us.html">About Us </a></li>
      <li><a href="password.html">Online Reporting </a></li>
      <li><a href="policy and procedure.html"> Policy &
Procedure </a></li>
      <li><a href="Archive and Articles.html">Archive &
Articles
</a></li>
      <li><a href="http://localhost/icebb/index.php">Forum</a></li>
    </ul>
  </div>
  <div id="splash"><a href="#"></a></div>
</div>
```

```

<hr />
<div id="page">
  <div id="content">
    <div>
      <h1 class="title">User validation </h1>
      <div class="content">
        <p>&nbsp;</p>
        <?php
          extract($_POST);

          //check if user has left USERNAME or PASSWORD field blank
          if(!$USERNAME|| !$PASSWORD) {
            fieldsBlank();
            die();
          }

          //check if the New User button was clicked
          if ( isset($NewUser)){
            //open password.txt for writing using append mode
            if(!$file = fopen("password.txt", "a")){

              //print error message and terminate script
              //execution if file cannot be opened
              print("<title>Error</title></head><body>Could not open password
file</body></html>");
              die();
            }

            //write username and password to file and
            //call function userAdded
            fputs ($file, "$USERNAME,$PASSWORD\n");
            userAdded($USERNAME);
          }
          else{

            //if a new user is not being added, open file
            //for reading

            if(!$file = fopen("password.txt", "r")){
              print("<title>Error</title></head><body>Could not open password
file</body></html>");
              die();
            }

            $userVerified = 0;
            //read each line in file and check username

```

```

//password

while (!feof($file)&& !$userVerified){

//read line from file
$line = fgets($file,255);

//remove newline character from end of line
$line = chop($line);

//split username and password
$field = split(" ", $line, 2);

//verify username
if ($USERNAME==$field[0]){
    $userVerified = 1;
//call function checkPassword to verify
//user's password
if (checkPassword($PASSWORD,$field)
== true)
accessGranted($USERNAME);
else
wrongPassword();
}}
//close text file
fclose($file);
//call function accessDenied if username has
//not been verified
if(!$userVerified)
accessDenied();
}
//verify user password and return a boolean
function checkPassword($userpassword,$filedata)
{
    if ( $userpassword == $filedata[1] )
        return true;
    else
        return false;
}

//print a message indicating the user has been added
function userAdded($name)
{
    print("<title>Thank You</title></head>
    <body style = \"font-family: arial;color:green\">

```



```

        <strong>You have been added to the user list,
$name.<br/><br/><a href= online%20reporting.html> Click here to
proceed</a></strong>");
    }
    //print a message indicating permission
    //has been granted

    function accessGranted($name)
    {
        print("<title>Thank You</title></head>
        <body style = \"font: arial;color:green\">
            <strong>Permission has been granted.<br/><br/>
            <a href= online%20reporting.html> Click here to
proceed</a></strong>");

    }
    //print a message indicating password is invalid
    function wrongPassword()
    {
        print("<title>Access Denied</title></head>
        <body style = \"font-family: arial;color:red\">
            <strong>You entered an invalid password.
            <br/>Access has been denied. <br/><br/>
            <a href= password.html> Back

</a><br/></strong>");
    }

    //print a message indicating access has been denied
    function accessDenied()
    {
        print("<title>Access Denied</title></head>
        <body style = \"font-family: arial;color:red\">
            <strong>You were denied access to this server.<br/><br/>
            <a href= password.html> Back

</a><br/></strong>");
    }
    //print a message indicating that fields
    //has been left blank

    function fieldsBlank()
    {
    print("<title>Access Denied</title></head>
        <body style = \"font-family: arial;color:red\">
            <strong>Please fill in all form fields.<br/><br/><br/>

```

[Back](password.html)

```
</a><br/></strong>");
    }
    ?>
</div>
</div>
<div class="twocols"></div>
</div>
<div style="clear: both;">&nbsp;</div>
</div>
<hr />
<div id="footer-wrapper">
  <div id="footer">
    <p id="legal">Copyright &copy; 2007 UTP HSE System. All Rights Reserved<br />
      Designed by webmaster: Aimi Diyana Zali </p>
    <p id="links"><a href="#">Homepage</a> | <a href="#"> FAQ</a> | <a
href="http://validator.w3.org/check/referer" title="This page validates as XHTML 1.0
Transitional"><abbrev>Site Map </abbrev></a> | <a href="http://jigsaw.w3.org/css-
validator/check/referer" title="This page validates as CSS"><abbrev>Petronas Link
</abbrev></a></p>
  </div>
</div>
</body>
</html>
```

## Appendix D-4

### Online reporting page

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Strict//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-strict.dtd">
<!--

-->
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
<meta http-equiv="content-type" content="text/html; charset=utf-8" />
<title>UTP HSE System</title>
<meta name="keywords" content="" />
<meta name="description" content="" />
<link href="online reporting css.css" rel="stylesheet" type="text/css" /><style
type="text/css">
<!--
.style3 {
    font-size: 11px;
    color: #006600;
}
.style4 {font-size: 11px; color: #006600; font-weight: bold; }
.style5 {
    color: #FF0000;
    font-weight: bold;
}
-->
</style></head>
<body>
<div id="header">
    <div id="logo">
        <h1><a href="#">UTP HSE System</a></h1>
        <h2><a href="http://www.freecsstemplates.org/"> towards zero tolerance
in hazards... </a></h2>
    </div>
    <div id="topmenu">
        <ul>
            <li class="first"><a href="home.html">Homepage</a></li>
        </ul>

    </div>
</div>
<div id="header2">
    <div id="menu">
        <ul>
```

```

                <li class="first"><a href="About Us.html">About Us </a></li>
                <li><a href="password.html">Online Reporting </a></li>
                <li><a href="policy and procedure.html"> Policy & Procedure
Procedure </a></li>
                <li><a href="Archive and Articles.html">Archive & Articles
</a></li>
                <li><a href="#">Forum</a></li>
            </ul>
        </div>
        <div id="splash"><a href="#"></a></div>
</div>
<hr />
<div id="page">
    <div id="content">
        <div>
            <h1 class="title">HSE Online Reporting </h1>
            <p class="title">p/s: field with <span class="style5">*</span>
must be filled. </p>
            <form method="post" action="online_reporting.php"
enctype="multipart/form-data">
                <table width="329" border="0" cellspacing="0" cellpadding="0">
                    <tr>
                        <td width="138">Date (yyyy/mm/dd)<span class="style5">*</span></td>
                        <td width="191"><input type="text" name="Date"/>
                        </td>
                    </tr>
                    <tr>
                        <td>&nbsp;</td>
                        <td>&nbsp;</td>
                    </tr>
                    <tr>
                        <td><strong><span class="style3">Department
Details</span></strong></td>
                        <td>&nbsp;</td>
                    </tr>
                    <tr>
                        <td>&nbsp;</td>
                        <td>&nbsp;</td>
                    </tr>
                    <tr>
                        <td>Department</td>
                        <td><input type="text" name="Department"/></td>
                    </tr>
                    <tr>
                        <td>Block</td>

```

```

<td><input type="text" name="Block"/></td>
</tr>
<tr>
<td>Section Unit </td>
<td><input type="text" name="Section"/></td>
</tr>
<tr>
<td>&nbsp;</td>
<td>&nbsp;</td>
</tr>
<tr>
<td class="style4">Incident Details </td>
<td>&nbsp;</td>
</tr>
<tr>
<td class="style4">&nbsp;</td>
<td>&nbsp;</td>
</tr>
<tr>
<td>Injured Person's Name <span class="style5">*</span></td>
<td><input type="text" name="Injured_name"/>
</td>
</tr>
<tr>
<td>Injured Person's I/C </td>
<td><input type="text" name="Injured_ic"/></td>
</tr>
<tr>
<td>Time of Accident<span class="style5">*</span> </td>
<td><input type="text" name="time_accident"/>
</td>
</tr>
<tr>
<td>Date of Accident (yyyy/mm/dd) <span class="style5">*</span></td>
<td><input type="text" name="date_accident"/>
</td>
</tr>
<tr>
<td>Place of Accident <span class="style5">*</span></td>
<td><input type="text" name="place_accident"/>
</td>
</tr>
<tr>
<td>&nbsp;</td>
<td>&nbsp;</td>
</tr>

```



```

<tr>
  <td class="style3">Witness 1<span class="style5">*</span></td>
  <td>&nbsp;</td>
</tr>

  <tr>
    <td>Name<span class="style5">*</span></td>
    <td><input type="text" name="witness1_name"/></td>
  </tr>
  <tr>
    <td>I/C No</td>
    <td><input type="text" name="witness1_IC"/></td>
  </tr>
  <tr>
    <td>Designation</td>
    <td><input type="text"
name="witness1_designation"/></td>
  </tr>
  <tr>
    <td>Contact Number -(555)-555 5555 <span
class="style5">*</span></td>
    <td><input type="text" name="witness1_contact"/></td>
  </tr>
  <tr>
    <td>&nbsp;</td>
  </tr>
  <tr>
    <td>&nbsp;</td>
  </tr>
  <tr>
    <td class="style3">Witness 2</td>
    <td>&nbsp;</td>
  </tr>

  <tr>
    <td>Name</td>
    <td><input type="text" name="witness2_name"/></td>
  </tr>
  <tr>
    <td>I/C No</td>
    <td><input type="text" name="witness2_IC"/></td>
  </tr>
  <tr>
    <td>Designation</td>
    <td><input type="text"
name="witness2_designation"/></td>
  </tr>
  <tr>
    <td>Contact Number -(555)-555 5555</td>
    <td><input type="text" name="witness2_contact"/></td>
  </tr>

```





```
<p id="legal">Copyright &copy; 2007 UTP HSE System. All Rights Reserved<br />
    Designed by webmaster: Aimi Diyana Zali </p>
    <p id="links"><a href="#">Homepage</a> |<a href="#"> FAQ</a> | <a
href="http://validator.w3.org/check/referer" title="This page validates as XHTML 1.0
Transitional"><abbrev>Site Map </abbrev></a>| <a href="http://jigsaw.w3.org/css-
validator/check/referer" title="This page validates as CSS"><abbrev>Petronas Link
</abbrev></a></p>
</div>
</div>
</body>
</html>
```

## Appendix D-5

### Online reporting.php

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Strict//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-strict.dtd">
<!--
-->
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
<meta http-equiv="content-type" content="text/html; charset=utf-8" />
<title>Form Validation</title>
<meta name="keywords" content="" />
<meta name="description" content="" />
<link href="online reporting css.css" rel="stylesheet" type="text/css" /><style
type="text/css">
<!--
.style3 {
    font-size: 11px;
    color: #006600;
}
.style4 {font-size: 11px; color: #006600; font-weight: bold; }
-->
</style>
<script type="text/JavaScript">
<!--
function MM_popupMsg(msg) { //v1.0
    alert(msg);
}
//-->
</script>
</head>
<div id="header">
    <div id="logo">
        <h1><a href="#">UTP HSE System</a></h1>
        <h2><a href="http://www.freecsstemplates.org/"> towards zero tolerance
in hazards... </a></h2>
    </div>
    <div id="topmenu">
        <ul>
            <li class="first"><a
href="home.html">Homepage</a></li><li></li>
        </ul>

    </div>
</div>
```

```

<div id="header2">
  <div id="menu">
    <ul>
      <li class="first"><a href="About Us.html">About Us </a></li>
      <li><a href="password.html">Online Reporting </a></li>
      <li><a href="policy and procedure.html"> Policy &amp;
Procedure </a></li>
      <li><a href="Archive and Articles.html">Archive &amp; Articles
</a></li>
      <li><a href="http://localhost/icebb/index.php">Forum</a></li>
    </ul>
  </div>
  <div id="splash"><a href="#"></a></div>
</div>
<hr />
<div id="page">
  <div id="content">
    <div>
      <h1 class="title">&nbsp;</h1>
      <?php extract($_POST);

      //build INSERT      query
      $sql = " INSERT INTO reporting".
          " VALUES
($Date','$Department','$Block','$Section','$Injured_name','$Injured_ic','$time_accident',
'$date_accident','$place_accident', '$nature', '$details', '$witness1_name', '$witness1_IC',
'$witness1_designation', '$witness1_contact', '$witness2_name', '$witness2_IC',
'$witness2_designation', '$witness2_contact', '$condition')";

      //connect to mysql
      if(!($connection = mysql_connect("localhost", "root", "")))
          die("Could not connect to database");

      //open Online Reporting database
      if(!mysql_select_db("online_reporting",$connection))
          die("Could not open Online Reporting Database");

      //execute query in Online Reporting database
      if( !($result = mysql_query($sql, $connection) ) ){
          print("Could not execute query!!!");
          die( mysql_error() );
      }
      ?>
<p>Hi
      <strong><?php print( "$witness1_name" ); ?></strong>

```



```
Transitional"><abbrev>Site Map </abbrev></a>| <a href="http://jigsaw.w3.org/css-  
validator/check/referer" title="This page validates as CSS"><abbrev>Petronas Link  
</abbrev></a></p>  
</div>  
</div>  
</body>  
</html>
```

Policy and Procedure Page

```

<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Strict//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-strict.dtd">
<!--

-->
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
<meta http-equiv="content-type" content="text/html; charset=utf-8" />
<title>UTP HSE System</title>
<meta name="keywords" content="" />
<meta name="description" content="" />
<link href="policy and procedure css.css" rel="stylesheet" type="text/css" /></head>
<body>
<div id="header">
    <div id="logo">
        <h1><a href="#">UTP HSE System</a></h1>
        <h2><a href="http://www.freecsstemplates.org/"> towards zero tolerance
in hazards... </a></h2>
    </div>
    <div id="topmenu">
        <ul>
            <li class="first"><a href="home.html">Homepage</a></li>
        </ul>
    </div>
</div>
</div>
<div id="header2">
    <div id="menu">
        <ul>
            <li class="first"><a href="About Us.html">About Us </a></li>
            <li><a href="password.html">Online Reporting </a></li>
            <li><a href="policy and procedure.html"> Policy &amp;
Procedure </a></li>
            <li><a href="Archive and Articles.html">Archive &amp; Articles
</a></li>
            <li><a href="http://localhost/icebb/index.php">Forum</a></li>
        </ul>
    </div>
    <div id="splash"><a href="#"></a></div>
</div>
<hr />

```

```

<div id="page">
  <div id="content">
    <div>
      <h1 class="title">Policy and Procedure of Accident/Incident
Notification</h1>
      <div class="content">
        <table width="683" border="0" cellspacing="0" cellpadding="0">
          <tr>
            <td><a name="Top" id="Top"></a></td>
            <td>&nbsp;</td>
            <td width="16">&nbsp;</td>
            <td width="358">&nbsp;</td>
          </tr>
          <tr>
            <td width="19"></td>
            <td width="290"><a href="#Scope">Scope</a><a name="Scope"
id="Scope"></a></td>
            <td></td>
            <td>References<a name="references" id="references"></a></td>
          </tr>
          <tr>
            <td></td>
            <td><a href="#Objectives">Objectives</a><a name="Objectives"
id="Objectives"></a></td>
            <td></td>
            <td>Reporting Matrix <a name="matrix" id="matrix"></a></td>
          </tr>
          <tr>
            <td></td>
            <td><a href="#Definition">Definitions</a><a name="Definition"
id="Definition"></a></td>
            <td></td>
            <td>Internal Incident Notification Form <a name="NotiForm"
id="NotiForm"></a></td>
          </tr>
          <tr>
            <td></td>
            <td><a href="#Guide">Guidelines</a><a name="Guide"
id="Guide"></a></td>

```

```

        <td></td>
        <td>Investigation Report Form<a name="InvestForm" id="InvestForm"></a>
</td>
</tr>
<tr>
        <td></td>
        <td><a href="#Procedure">Procedure</a><a name="Procedure"
id="Procedure"></a></td>
        <td></td>
        <td>Incident Investigation Checklist <a name="Checklist"
id="Checklist"></a></td>
</tr>
<tr>
        <td></td>
        <td><a href="#InvestGuideline">Investigation Guidelines</a> <a
name="InvestGuideline" id="InvestGuideline"></a></td>
        <td></td>
        <td>Incident/Accident Notification Flowchart <a name="Flowchart"
id="Flowchart"></a></td>
</tr>
<tr>
        <td></td>
        <td>Responsibility<a name="Responsibility" id="Responsibility"></a></td>
        <td></td>
        <td>Tripod Accident Causation Sequence <a name="Tripod"
id="Tripod"></a></td>
</tr>
<tr>
        <td>&nbsp;</td>
        <td>&nbsp;</td>
        <td>&nbsp;</td>
        <td>&nbsp;</td>
</tr>
</table>
<div>
        <table width="683" border="0" cellspacing="0" cellpadding="0">
        <tr>
        <td>&nbsp;</td>
        </tr>
</div>

```



<p>&lt;tr&gt;  &lt;td&gt;&lt;strong&gt;1.Scope&lt;a name="Scope" id="Scope"&gt;&lt;/a&gt;&lt;/strong&gt;&lt;/td&gt;  &lt;/tr&gt;  &lt;tr&gt;  &lt;td&gt;This procedure and guideline shall apply to all UTP staff,students and  contracters &lt;/td&gt;  &lt;/tr&gt;  &lt;tr&gt;  &lt;td&gt;&lt;div align="right"&gt;&lt;a href="#Top"&gt;Top&lt;/a&gt;&lt;/div&gt;&lt;/td&gt;  &lt;/tr&gt;  &lt;tr&gt;  &lt;td&gt;&amp;nbsp;&lt;/td&gt;  &lt;/tr&gt;  &lt;tr&gt;  &lt;td&gt;&lt;strong&gt;2.Objectives&lt;a name="Objectives"  id="Objectives"&gt;&lt;/a&gt;&lt;/strong&gt;&lt;/td&gt;  &lt;/tr&gt;  &lt;tr&gt;  &lt;td&gt;&lt;div align="justify"&gt;The purpose of this procedure and guidelines is to  establish an effective initial incident notification which has the potential to cause and/or  has caused harm to people, staff, asset, business operations, environment, reputation and  security of the company. &lt;/div&gt;&lt;/td&gt;  &lt;/tr&gt;  &lt;tr&gt;  &lt;td&gt;&lt;div align="right"&gt;&lt;a href="#Top"&gt;Top&lt;/a&gt;&lt;/div&gt;&lt;/td&gt;  &lt;/tr&gt;  &lt;tr&gt;  &lt;td&gt;&amp;nbsp;&lt;/td&gt;  &lt;/tr&gt;  &lt;tr&gt;  &lt;td&gt;&lt;strong&gt;3.Definition&lt;a name="Definition"  id="Definition"&gt;&lt;/a&gt;&lt;/strong&gt;&lt;/td&gt;  &lt;/tr&gt;  &lt;tr&gt;  &lt;td&gt;&lt;div align="justify"&gt;Incident - refers to an event or chain of events,  which can cause and/or has caused injuries, illness and/or damages (losses) to assets,  people, the environment and third parties. Such an incident would include lost times,  fatalities, fires, explosions, oil/chemical spills, toxic vapor releases, labor unrest, criminal  incidents, community disturbances, civil strife, kidnapping/hostage, terrorism, bomb  threats/sabotage, death threats, political strikes, etc. &lt;/div&gt;&lt;/td&gt;  &lt;/tr&gt;  &lt;tr&gt;  &lt;td&gt;&lt;div align="right"&gt;&lt;a href="#Top"&gt;Top&lt;/a&gt;&lt;/div&gt;&lt;/td&gt;  &lt;/tr&gt;  &lt;tr&gt;  &lt;td&gt;&amp;nbsp;&lt;/td&gt;</p>
---

```

</tr>
<tr>
<td><strong>4.Petronas Broad Guidelines<a name="Guide"
id="Guide"></a></strong></td>
</tr>
<tr>
<td><ol>
<li>
<div align="justify">Notification of incident is on the discretion of the
Operating Units Management, County Managers or PETRONAS Representatives.
However, if an incident has a potential impact on reputation, credibility or security of
PETRONAS, the President, Business Heads, Divisional Heads, Communication Center
(COMCEN) and relevant parties must be informed. This notification should take place
before or on activating the following plans i.e. Emergency Response Plan, Country
Specific Security Plan and PETRONAS Disaster Management System(PDMS).</div>
</li>
<li>Attachment provides a matrix of guidelines (Attachment 1), which can
be referred to when in doubt. </li>
<li>The reporting of incidents is also applicable to Malaysian Production
Sharing Contractors (PSCs) who are to report any incidences to the Petroleum
Management Unit(PMU) in Petronas. </li>
<li>The time of incident reporting and reporting is in accordance to local
time where the report is made </li>
<li>Incidents are to be notified via on-line PETRONAS incident
notification system that available at the PETRONAS Corporate HSE(CHSE) Unit
website. </li>
</ol></td>
</tr>
<tr>
<td>&nbsp;</td>
</tr>
<tr>
<td><div align="right"><a href="#Top">Top</a></div></td>
</tr>
<tr>
<td>&nbsp;</td>
</tr>
<tr>
<td><strong>5.UTP Internal Notification Procedures<a name="Procedure"
id="Procedure"></a></strong></td>
</tr>
<tr>
<td><div align="justify">5.1 Immediate Action </div></td>
</tr>
<tr>

```



</tr>

<tr>

<td>(e) The UTP HSE Committee representative(s) </td>

</tr>

<tr>

<td>&nbsp;</td>

</tr>

<tr>

<td><div align="justify">The investigation team shall discuss what went wrong and ways in which work practices can be improved to avoid such an accident/incident in the future, in a blame free atmosphere. For all major accidents( category 2 and above of the notification matrix table), the HSE Manager is to be present in the investigation. A short written report of the investigation findings and proposals for remedial action is to be provided to the HSE Unit within 7 working days of the accident/incident and the HSE shall discuss the findings in the HSE Committee meeting within 3 working days. The following additional events will also require investigation with reports to the Employer:- </div></td>

</tr>

<tr>

<td>&nbsp;</td>

</tr>

<tr>

<td>(a) Occupational illness </td>

</tr>

<tr>

<td>(b) Fire or explosion </td>

</tr>

<tr>

<td>(c) Property damage </td>

</tr>

<tr>

<td>(d) Hazardous substance discharge or chemical spillage </td>

</tr>

<tr>

<td>(e) Major near miss incident </td>

</tr>

<tr>

<td>(f) Major environmental damages or non-compliances </td>

</tr>

<tr>

<td>&nbsp;</td>

</tr>

<tr>

<td>5.4 Treatment of the Injured </td>

</tr>

<tr>



</ol>  
</div></td>  
</tr>

<tr>  
<td>&nbsp;</td>  
</tr>

<tr>  
<td>6.2 Appointment of investigation team</td>  
</tr>

<tr>  
<td><ol>  
<li>  
<div align="justify">Based on the UTP requirement, where required, HSE manager shall appoint an investigation team.</div>

</li>  
<li>  
<div align="justify">The appointed team members shall be neutral or not bias and have knowledge on the process related to the accident.</div>

</li>  
</ol></td>  
</tr>

<tr>  
<td>&nbsp;</td>  
</tr>

<tr>  
<td>6.3 Preparation </td>  
</tr>

<tr>  
<td><ol>  
<li>  
<div align="justify">Investigate as soon as possible </div>  
</li>  
<li>  
<div align="justify">Consider background information before visiting site. Information could include procedures of type of operation involved, job instructions on the operations involved, location plans, etc. </div>

</li>  
</ol></td>  
</tr>

<tr>  
<td><div align="justify"></div></td>  
</tr>

```

<tr>
  <td>6.4 Fact Findings </td>
</tr>
<tr>
  <td><ol>
    <li>Use questions &quot;What, why, when, how, where, who&quot;; </li>
    <li>Consider environment, equipment, procedures, people, organization
</li>
    <li>Prepare accident investigation tree to identify leads. </li>
    <li>Look for underlying causes and human factors. </li>
    <li>Use site inspection, interviews and records and procedures to establish
facts. </li>
    <li>Establish the sequence of events. </li>
  </ol></td>
</tr>
<tr>
  <td>&nbsp;</td>
</tr>
<tr>
  <td>6.5 Analysis of findings </td>
</tr>
<tr>
  <td><ol>
    <li>
      <div align="justify">Avoid blame where possible </div>
    </li>
    <li>
      <div align="justify">Question establish methods and procedures </div>
    </li>
    <li>
      <div align="justify">Implement Tripod Accident/Incident Causation
Sequence diagram where possible to obtain clear understanding on the event </div>
    </li>
  </ol></td>
</tr>
<tr>
  <td>&nbsp;</td>
</tr>
<tr>
  <td>6.6 Recommendation </td>
</tr>
<tr>
  <td><ol>
    <li>Identify and make action items specific to prevent recurrence </li>

```

<ul style="list-style-type: none"> <li>&lt;li&gt;Agree time schedule for implementation of recommendation&lt;/li&gt;</li> </ul>
</ol></td>
</tr>
<tr>
<td>&nbsp;</td>
</tr>
<tr>
<td>6.7 Report </td>
</tr>
<tr>
<td><ol>
<ul style="list-style-type: none"> <li>&lt;li&gt;Include accident investigation tree. &lt;/li&gt;</li> <li>&lt;li&gt;Discuss with the line and HSE Unit before issue &lt;/li&gt;</li> </ul>
</ol></td>
</tr>
<tr>
<td>&nbsp;</td>
</tr>
<tr>
<td>6.8 Data Recording </td>
</tr>
<tr>
<td><p>(a)Key data from all incidents should be registered in a database to facilitate: </p></td>
</tr>
<tr>
<td>- Preparation of performance reporting requirements </td>
</tr>
<tr>
<td>- Statistical analysis of incident data </td>
</tr>
<tr>
<td>- Causal/trend analysis </td>
</tr>
<tr>
<td>&nbsp;</td>
</tr>
<tr>
<td>6.9 Follow-up</td>
</tr>
<tr>
<td><ol>
<li>



```

        <div align="justify">Give report widest possible internal circulation, so
that learning points are disseminated to all so as to prevent recurrence</div>
    </li>
    <li>
        <div align="justify">Discuss at and get the feedback from HSE
meetings</div>
    </li>
    <li>
        <div align="justify">Implement the recommendations after being
reviewed and endorsed by the management</div>
    </li>
    <li>
        <div align="justify">Monitor the implementation of recommendations
</div>
    </li>
    <li>
        <div align="justify">Establish a formal follow-up monitoring system, to
ensure that agreed actions are implemented and/or non conformances are known to
management and formally endorsed. </div>
    </li>
</ol></td>
</tr>
<tr>
<td>&nbsp;</td>
</tr>
<tr>
<td>7.0 <strong>Responsibility</strong></td>
</tr>
<tr>
<td>7.1 PETRONAS Broad </td>
</tr>
<td><div align="justify">It is the responsibility of the relevant personnel in
the location as appointed by the OPU management/Country manager or based on the
existing reporting Procedure in ERP, Country Security Plans,etc to notify the President
(President Office), Business Head, Divisional Heads, COMCEN and relevant parties of
all incidents. </div></td>
</tr>
<tr>
<td>&nbsp;</td>
</tr>
<tr>
<td>7.2 UTP Dept.Manager/respective lecturer/ executive </td>
</tr>
<tr>

```

**<td><div align="justify">To submit a written report of the incident/accident to the HSE Unit by using the attached form. He/she shall responsible to send the injured person to the nearest hospital by their own vehicle if necessary. </div></td>**

**</tr>**

**<tr>**

**<td>&nbsp;</td>**

**</tr>**

**<tr>**

**<td>7.3 UTP Staff, contractors and student</td>**

**</tr>**

**<tr>**

**<td>Shall inform the incident / accident immediately to the superior or fellow and HSE Unit . </td>**

**</tr>**

**<tr>**

**<td>&nbsp;</td>**

**</tr>**

**<tr>**

**<td>7.4 UTP HSE Manager </td>**

**</tr>**

**<tr>**

**<td><div align="justify">HSE Manager is responsible to review the report of the incident/accident msde by the respective Dept Manager or executive or technician before the submission to the externals parties such as DOSH and shall lead the accident investigation team. </div></td>**

**</tr>**

**<tr>**

**<td>&nbsp;</td>**

**</tr>**

**<tr>**

**<td>8.0 <strong>References</strong></td>**

**</tr>**

**<tr>**

**<td>&nbsp;</td>**

**</tr>**

**<tr>**

**<td>8.1 PETRONAS Initial Incident Reporting Procedure </td>**

**</tr>**

**<tr>**

**<td>8.2 KLCCPB's emergency flowchart & accident report form </td>**

**</tr>**

**<tr>**

**<td>8.3 Rahmandalib Consultant & Services S/B - Awareness & HEMP Training Notes </td>**

**</tr>**

**<tr>**

```

        <td>8.4 Rahmandalib Consultant & Services S/B - In-house Safety
        & Health Officer Training </td>
    </tr>
</table>
</div>
<p align="justify">&nbsp;</p>
<p align="justify">&nbsp;</p>
</div>
</div>
<div class="twocols"></div>
</div>
<div style="clear: both;">&nbsp;</div>
</div>
<hr />
<div id="footer-wrapper">
    <div id="footer">
<p id="legal">Copyright &copy; 2007 UTP HSE System. All Rights Reserved<br />
    Designed by webmaster: Aimi Diyana Zali </p>
    <p id="links"><a href="#">Homepage</a> | <a href="#"> FAQ</a> | <a
href="http://validator.w3.org/check/referer" title="This page validates as XHTML 1.0
Transitional"><abbrev>Site Map </abbrev></a>| <a href="http://jigsaw.w3.org/css-
validator/check/referer" title="This page validates as CSS"><abbrev>Petronas Link
</abbrev></a></p>
    </div>
</div>
</body>
</html>

```

## Appendix D-7

### Archive and Articles Page

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Strict//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-strict.dtd">
<!--

-->
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
<meta http-equiv="content-type" content="text/html; charset=utf-8" />
<title>UTP HSE System</title>
<meta name="keywords" content="" />
<meta name="description" content="" />
<link href="policy and procedure css.css" rel="stylesheet" type="text/css" /></head>
<body>
<div id="header">
  <div id="logo">
    <h1><a href="#">UTP HSE System</a></h1>
    <h2><a href="http://www.freecsstemplates.org/"> towards zero tolerance
in hazards... </a></h2>
  </div>
  <div id="topmenu">
    <ul>
      <li class="first"><a href="home.html">Homepage</a></li>
    </ul>

  </div>
</div>
<div id="header2">
  <div id="menu">
    <ul>
      <li class="first"><a href="About Us.html">About Us </a></li>
      <li><a href="password.html">Online Reporting </a></li>
      <li><a href="policy and procedure.html"> Policy &
Procedure </a></li>
      <li><a href="Archive and Articles.html">Archive &
Articles
</a></li>
      <li><a href="http://localhost/icebb/index.php">Forum</a></li>
    </ul>
  </div>
  <div id="splash"><a href="#"></a></div>
</div>
<hr />
```

```

<div id="page">
  <div id="content">
    <div>
      <h1 class="title">Archive and Articles </h1>
      <div class="content">
        <table width="683" border="0" cellspacing="0" cellpadding="0">
          <tr>
            <td>&nbsp;</td>
            <td>&nbsp;</td>
            <td width="16">&nbsp;</td>
            <td width="358">&nbsp;</td>
          </tr>
          <tr>
            <td width="19"></td>
            <td width="290"><a href="Gas Cylinder Safety.html">Gas Cylinder Safety
</a></td>
            <td></td>
            <td><a href="Electrical Safety.html">Electrical Safety </a></td>
          </tr>
          <tr>
            <td></td>
            <td><div align="left"><a href="Carbon Monoxide-The Silent
Killer.html">Carbon Monoxide Poisoning : The Silent Killer</a> </div></td>
            <td></td>
            <td><a href="Poison Safety Tips.html">Poison Safety Tips </a></td>
          </tr>
          <tr>
            <td></td>
            <td><a href="Safety Eyeware Selection Guide.html">Safety Eyeware
Selection Guide </a></td>
            <td></td>
            <td><a href="Ladder Safety.html">Ladder Safety</a> </td>
          </tr>
          <tr>
            <td></td>
            <td><a href="Fire Extinguisher Selection .html">Fire Extinguisher Selection
</a></td>
            <td></td>

```

```

        <td><a href="Laboratory Colour Fitting Code.html">Laboratory Colour
Fitting Code </a></td>
    </tr>
    <tr>
        <td></td>
        <td><a href="Tips on Fire Prevention Strategy.html">Tips on Office Fire
Prevention Strategies</a> </td>
        <td></td>
        <td><a href="How to identify hand hazard.html">How to identify hand
hazard? </a></td>
    </tr>
    <tr>
        <td></td>
        <td><a href="Smoke Alarm.html">Smoke Alarm</a> </td>
        <td></td>
        <td><a href="Accident Investigation.html">Accident Investigation</a> </td>
    </tr>
    <tr>
        <td></td>
        <td><a href="Lighting Safety.html">Lightning Safety </a></td>
        <td></td>
        <td><a href="Have You Got The Right Suit.html">Have You Got The Right
Suit? </a></td>
    </tr>
    <tr>
        <td></td>
        <td><a href="Handling With Solvent.html">Handling with Solvent </a></td>
        <td></td>
        <td><a href="Asia Toxic Time Bomb.html">Asia's Toxic Time Bomb</a>
</td>
    </tr>
</table>
<div>
    <table width="683" border="0" cellspacing="0" cellpadding="0">
        <tr>
            <td width="416" class="style4">&nbsp;</td>
        </tr>
    </table>
</div>

```

```

        <td colspan="2"><div align="left">
            <p>If you have any interesting stories, appreciate if u can send it to
mfuad@petronas.com.my </p>
        </div></td>
        <td width="10"></td>
    </table>
        </div>
        <p align="justify">&nbsp;</p>
        <p align="justify">&nbsp;</p>
    </div>
</div>
<div class="twocol"></div>
</div>
<div style="clear: both;">&nbsp;</div>
</div>
<hr />
<div id="footer-wrapper">
    <div id="footer">
<p id="legal">Copyright &copy; 2007 UTP HSE System. All Rights Reserved<br />
        Designed by webmaster: Aimi Diyana Zali </p>
        <p id="links"><a href="#">Homepage</a> |<a href="#"> FAQ</a> | <a
href="http://validator.w3.org/check/referer" title="This page validates as XHTML 1.0
Transitional"><abbrev>Site Map </abbrev></a>| <a href="http://jigsaw.w3.org/css-
validator/check/referer" title="This page validates as CSS"><abbrev>Petronas Link
</abbrev></a></p>
    </div>
</div>
</body>
</html>

```

Forum

```

<?php
//*****//
//      //      //      //
//      //      //      //
//      //      //      //
//      //      //      //
//      //      //      //
//      //      //      //
//*****//
// icebb.net // 0.9
//*****//
// IceBB integration module
// $Id: index.php 1 2006-04-25 22:10:16Z mutantmonkey $
//*****//
// ICEBB IS FREE SOFTWARE.
// http://icebb.net/license/
//*****//

define('PATH_TO_ICEBB'           , "");
require(PATH_TO_ICEBB.'icebb.php');
$icebb_instance                  = new icebb();
$icebb_instance->path_to_icebb   = "";
$icebb_instance->url_to_icebb    = "";
$icebb_instance->init();
//echo $icebb->output;
?>

```



## Appendix D-9

### Feedback Form

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Strict//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-strict.dtd">
<!--

-->
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
<meta http-equiv="content-type" content="text/html; charset=utf-8" />
<title>UTP HSE System</title>
<meta name="keywords" content="" />
<meta name="description" content="" />
<link href="policy and procedure css.css" rel="stylesheet" type="text/css" />
</head>
<body>
<div id="header">
  <div id="logo">
    <h1><a href="#">UTP HSE System</a></h1>
    <h2><a href="http://www.freecsstemplates.org/"> towards zero tolerance
in hazards... </a></h2>
  </div>
  <div id="topmenu">
    <ul>
      <li class="first"><a href="home.html">Homepage</a></li>
    </ul>

  </div>
</div>
<div id="header2">
  <div id="menu">
    <ul>
      <li class="first"><a href="About Us.html">About Us </a></li>
      <li><a href="password.html">Online Reporting </a></li>
      <li><a href="policy and procedure.html"> Policy &
Procedure </a></li>
      <li><a href="Archive and Articles.html">Archive & Articles
</a></li>
      <li><a href="http://localhost/icebb/index.php">Forum</a></li>
    </ul>
  </div>
  <div id="splash"><a href="#"></a></div>
```

```

</div>
<hr />
<div id="page">
  <div id="content">
    <div>
      <h1 class="title">Feedback Form </h1>
      <div class="content">
        <table width="683" border="0" cellspacing="0" cellpadding="0">
          <tr>
            <td colspan="4"><div align="left">
              <p align="justify">&nbsp;</p>
            </div></td>
          </tr>
        </table>
        <div>
          <table width="683" border="0" cellspacing="2" cellpadding="2">
            <tr>
              <td>Please fill out this form to help us improve our site. </td>
            </tr>
            <tr><form method="post" action="Feedback Form.php">
              <td>&nbsp;</td>
            </tr>
            <tr>
              <td><p><label>Name:
                <input name="survey_respondent" type="text"
size="25"/>
                </label></p>
            </td>
            </tr>
            <tr>
              <td><p><label>Comments:<br/>
                <textarea name="comments" rows="4"
cols="36"></textarea></label></p>
            </td>
            </tr>
            <tr>
              <td><p><label>E-mail Address:
                <input name="email" type="text" size="25"/>
                </label></p>
            </td>
            </tr>
            <tr>
              <td><p><strong>Things you liked about this website:</strong></p></td>
            </tr>
          </table>
        </div>
      </div>
    </div>
  </div>
</div>

```

```
<td><label>Site Design <input name="thingsliked" type="radio"
value="Design"/></label>
```

```
<label>Links <input name="thingsliked" type="radio"
value="Links"/></label>
```

```
<label>Ease of Use <input name="thingsliked" type="radio"
value="Ease"/></label>
```

```
<label>Images <input name="thingsliked"
type="radio" value="Images"/></label></td>
</tr>
```

```
<tr>
<td><p><label>Rate our site:
<select name="rating">
<option selected="selected">Good</option>
<option>10</option>
<option>9</option>
<option>8</option>
<option>7</option>
<option>6</option>
<option>5</option>
<option>4</option>
<option>3</option>
<option>2</option>
<option>1</option>
<option>Awful</option>
</select></label></p>
</td>
</tr>
```

```
<tr>
<td><p><input type="submit" value="Submit your
feedback"/>
```

```
<input type="reset" value="Clear the feedback"/>
</p></td></tr>
```

```
</table>
</div>
<p align="justify">&nbsp;</p>
<p align="justify">&nbsp;</p>
</div>
</div>
<div class="twocol"></div>
</div>
```

```
<div style="clear: both;">&nbsp;</div>
</div>
<hr />
<div id="footer-wrapper">
  <div id="footer">
    <p id="legal">Copyright &copy; 2007 UTP HSE System. All Rights Reserved<br />
      Designed by webmaster: Aimi Diyana Zali </p>
    <p id="links"><a href="#">Homepage</a> |<a href="#"> FAQ</a> | <a
href="http://validator.w3.org/check/referer" title="This page validates as XHTML 1.0
Transitional"><abbrev>Site Map </abbrev></a>| <a href="http://jigsaw.w3.org/css-
validator/check/referer" title="This page validates as CSS"><abbrev>Petronas Link
</abbrev></a></p>
  </div>
</div>
</body>
</html>
```

## Appendix D-10

### Feedback Form.php

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Strict//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-strict.dtd">
<!--
-->
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
<meta http-equiv="content-type" content="text/html; charset=utf-8" />
<title>UTP HSE System</title>
<meta name="keywords" content="" />
<meta name="description" content="" />
<link href="policy and procedure css.css" rel="stylesheet" type="text/css" /></head>
<body>
<div id="header">
  <div id="logo">
    <h1><a href="#">UTP HSE System</a></h1>
    <h2><a href="http://www.freecsstemplates.org/"> towards zero tolerance
in hazards... </a></h2>
  </div>
  <div id="topmenu">
    <ul>
      <li class="first"><a href="home.html">Homepage</a></li>
    </ul>
  </div>
</div>
</div>
<div id="header2">
  <div id="menu">
    <ul>
      <li class="first"><a href="About Us.html">About Us </a></li>
      <li><a href="password.html">Online Reporting </a></li>
      <li><a href="policy and procedure.html"> Policy &
Procedure </a></li>
      <li><a href="Archive and Articles.html">Archive & Articles
</a></li>
      <li><a href="http://localhost/icebb/index.php">Forum</a></li>
    </ul>
  </div>
  <div id="splash"><a href="#"></a></div>
</div>
<hr />
<div id="page">
```

```

<div id="content">
  <div>
    <h1 class="title">continue...</h1>
    <div class="content">
      <table width="683" border="0" cellspacing="0" cellpadding="0">
        <tr>
          <td colspan="4"><div align="left">
            <?php extract($_POST);

                                //build INSERT      query
                                $sql = " INSERT INTO feedbackdb".
                                "
VALUES('$survey_respondent','$comments','$email','$thingsliked','$rating')";

                                //connect to mysql
                                if(!($connection = mysql_connect("localhost", "root", "")))
                                die("Could not connect to database");

                                //open Feedback database
                                if(!mysql_select_db("feedback",$connection))
                                die("Could not open Feedback Database");

                                //execute query in Online Reporting database
                                if( !($result = mysql_query($sql, $connection) ) ){
                                print("Could not execute query!!!");
                                die( mysql_error() );
                                }
                                ?>
          </td></tr>
        </table>
        <p>Hi
          <strong><?php print( "$survey_respondent" );
?></strong>
          Thank You for completing the feedback form.
          <br />This will help us improve our site.</p>

          <br />
          <br />

        </table>
        <p align="justify">&nbsp;</p>
        <p align="justify">&nbsp;</p>
      </div>
    </div>
  <div class="twocols"></div>
</div>

```

```
<div style="clear: both;">&nbsp;</div>
</div>
<hr />
<div id="footer-wrapper">
  <div id="footer">
    <p id="legal">Copyright &copy; 2007 UTP HSE System. All Rights Reserved<br />
      Designed by webmaster: Aimi Diyana Zali </p>
    <p id="links"><a href="#">Homepage</a> |<a href="#"> FAQ</a> | <a
href="http://validator.w3.org/check/referer" title="This page validates as XHTML 1.0
Transitional"><abbrev>Site Map </abbrev></a>| <a href="http://jigsaw.w3.org/css-
validator/check/referer" title="This page validates as CSS"><abbrev>Petronas Link
</abbrev></a></p>
  </div>
</div>
</body>
</html>
```

## Appendix D-11

### Admin Database View Page

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Strict//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-strict.dtd">
<!--
-->
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
<meta http-equiv="content-type" content="text/html; charset=utf-8" />
<title>UTP HSE System</title>
<meta name="keywords" content="" />
<meta name="description" content="" />
<link href="policy and procedure css.css" rel="stylesheet" type="text/css" />
</head>
<body>
<div id="header">
  <div id="logo">
    <h1><a href="#">UTP HSE System</a></h1>
    <h2><a href="http://www.freecsstemplates.org/"> towards zero tolerance
in hazards... </a></h2>
  </div>
  <div id="topmenu">
    <ul>
      <li class="first"><a href="home.html">Homepage</a></li>
    </ul>
  </div>
</div>
</div>
<div id="header2">
  <div id="menu">
    <ul>
      <li class="first"><a href="About Us.html">About Us </a></li>
      <li><a href="password.html">Online Reporting </a></li>
      <li><a href="policy and procedure.html"> Policy &amp;
Procedure </a></li>
      <li><a href="Archive and Articles.html">Archive &amp; Articles
</a></li>
      <li><a href="http://localhost/icebb/index.php">Forum</a></li>
    </ul>
  </div>
  <div id="splash"><a href="#"></a></div>
</div>
<hr />
```



```

<div id="page">
  <div id="content">
    <div>
      <h1 class="title">Administration</h1>
      <div class="content">
        <p>Welcome to database view</p>
        <p><a href="online_reporting2.php">HSE Online Reporting
Database </a></p>
        <a href="Feedback view.php">Feedback Database </a></div>
      </div>
      <div class="twocols"></div>
    </div>
    <div style="clear: both;">&nbsp;</div>
  </div>
  <hr />
  <div id="footer-wrapper">
    <div id="footer">
      <p id="legal">Copyright &copy; 2007 UTP HSE System. All Rights Reserved<br />
        Designed by webmaster: Aimi Diyana Zali </p>
      <p id="links"><a href="#">Homepage</a> |<a href="#"> FAQ</a> | <a
href="http://validator.w3.org/check/referer" title="This page validates as XHTML 1.0
Transitional"><abbrev>Site Map </abbrev></a>| <a href="http://jigsaw.w3.org/css-
validator/check/referer" title="This page validates as CSS"><abbrev>Petronas Link
</abbrev></a></p>
    </div>
  </div>
</body>
</html>

```