

A Proposed First Aid and Disaster Preparedness Interactive Reference System (FADPIRS) for Red Cross

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Abstract:

This study is an interactive information system that will help the user gain more knowledge about first aid and disaster preparedness. This will help the user aware on how to perform first aid for emergency medical cases and how to prevent damage when a calamity occurs. This study aims to develop a web-based reference and computer-based learning software that will provide a helpful tool or referential medium for users that are in need emergency response guidelines. The problem statement relies on understanding how Red Cross does to give knowledge about First Aid and Disaster Preparedness to the community using technology. In order to cater these problems A First Aid and Disaster Preparedness Interactive Reference System was created. A method of research strategy included a descriptive research approach. The research design refers to overall strategy that you choose to integrate the different components of the study. Data were collected from multiple sources: Survey Questioner and Interview Guide. A system conceptual framework for the study served as an analytical tool in data analysis. The study shows that there is a significant different between the status of the existing system of Red Cross to the effectiveness of the proposed system for Red Cross. The study shows that there is no significant relationship between the profile of the respondent to the status of the existing system of Red Cross. The study also shows that there is no significant relationship between the profiles

of the respondent to the effectiveness of the proposed system for Red Cross. This also shows the proposed solution to address the respondents about the problem of the existing system of Red Cross. The proponent – researcher found out and describes how to evaluate the proposed interactive reference system. This study is an interactive learning system helps to develop and to further understand the effectiveness and efficiency of the system to the existing system of the chosen company. The study used a survey method that the researcher creates a type of questionnaire that will answer by the respondents to help researcher find the result of the research study. The data gathered in this study were analyses using the Statistical Package for the Social Sciences (SPSS), a computer program used for statistical analysis. The proposed first aid and disaster preparedness interactive reference system will help the user to understand more on how to treat and perform first aid and disaster preparedness. This will also be a way of giving their thought and insight on a topic in the system or share their knowledge in a particular topic that will benefit the user.

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1 INTRODUCTION

This consist the problem in the existing system of Red Cross and the objective of the study for creating a “First Aid and Disaster Preparedness Interactive Reference System” this will also consist the scope and delimitation of the system and the

significant of the study. This will also consist the reason of the proponents in creating First Aid and Disaster Preparedness Interactive Reference System. This will discuss the problems about the profile of the respondents in terms of age and computer literacy, the status of the existing system in terms of usability, reliability, supportability and accessibility. The effectiveness of the proposed system in terms of usability, reliability, supportability and accessibility. If there’s a significant difference between effectiveness of the proposed system and the status of the existing system.

The main reason for the proponents to create first aid and disaster preparedness is to help the user to gain more knowledge about first aid, disaster preparedness. The existing system of Red Cross has limited information about First Aid “bites and stings, bleeding (nose bleeding), bone fracture, burns, cut, eye injury, frostbites, fainting, sprain” and also about Disaster Preparedness “earth quake, fire, flood and landslide” and the existing system of Red Cross is just an information system that can only display the locations, branches, services etc. there is no interaction with the user and the administrator. Most of the volunteer should know how to treat or perform first aid and disaster preparedness for emergency cases. Same as the non-volunteer people should be aware on how to treat and perform first aid and disaster preparedness for personal safety and emergency cases, these are the main reason for the proponents to create first aid and disaster preparedness to help the

user to gain more knowledge about first aid, disaster preparedness and also the main reason to aware the people on how to treat and perform first aid and disaster preparedness.

2 METHOD

Project Development

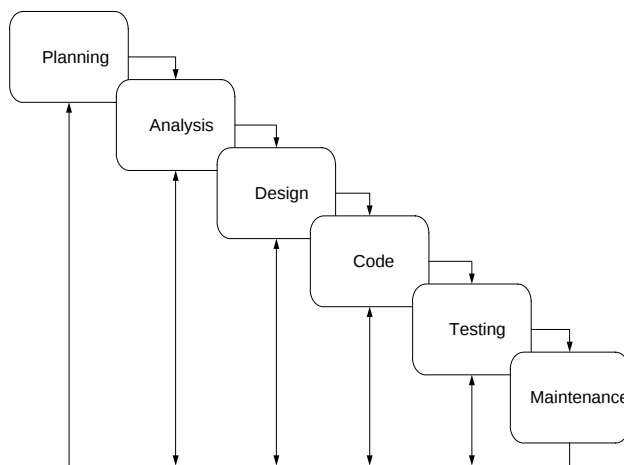


Figure 3.18: System Development Life Cycle (Waterfall Model)

Illustrates the structured on multiple phases in creating the proposed system. Determining on how the proponents plan the output and outline the information needed in the proposed system.

Then design the interface or the output of the system then code all the modules requirements and test the system for the correctness and the execution of the system and also planning on how to maintain the system.

The process illustrates the advancement of the project's development phase.

Planning

Is the process of thinking about and organizing the activities required to achieve a desired goal? Planning involves the

creation and maintenance of a plan. Here the proponents plan the outline, the process, the information needed to insert in the system and the maintenance of the system.

Analysis

The proponents determine the end-user requirements. The proponents documents all the user requirements and all the necessary information enable the user to create the propose software

Design

Activities in this phase include database design, user interface design, and detailed designs. The database design follows detailed information of the database schema, the user interface design includes the graphical user interface, and the detailed design identifies the modules and their corresponding interfaces as well as other details including the data structures and algorithms needed to implement each module.

Coding

It is where the code is written for each of the modules and the database design is implemented and properly integrated for each software function

Testing

After finishing the code, the software is tested. After unit testing of each module, the system is further tested and integrated with other external modules. Execution and results analysis report are generated after the software undergoes various testing procedures. The software is tested for errors and possible revisions and to test if it meets the project scope and the desired output of the project.

Maintenance

The software is installed according to the installation and deployment plan. Maintenance of the software then follows

after successful deployment. Various maintenance procedures are followed.

Evaluation Procedure

This consist all the evaluation procedure that the proponents use for the evaluation of the proposed software.

Statistical Treatment of Data

This describes what statistical treatment does the proponents used.

1. The statistical treatment used to answer what is the profile of the respondent. The proponents used frequency, percentage and rank distribution. To get the frequency, the proponents get the total number of population that have the same answer in every question and to get the percentage, the proponents divide the frequency of the respondents that have the same answer in every question to the total numbers of the population and multiply it to 100. This will be used for the rank distribution to determine the ranking.
2. The statistical treatment used for answering what is the status of the existing system. The proponents used descriptive statistics to get the total mean.

Formula:

Weighted Mean

$$x = \frac{f_1x_1 + f_2x_2 + \dots + f_nx_n}{N}$$

The proponents used the mean to describe if the status of the existing system is poor, needs improvement, average, satisfactory, and excellent.

3. The statistical treatment used for answering how effective is the proposed system. The proponents used descriptive statistics to get the total mean.

Formula:

Weighted Mean

$$x = \frac{f_1x_1 + f_2x_2 + \dots + f_nx_n}{N}$$

The proponents used the mean to describe effectiveness of system is poor, needs improvement, average, satisfactory and excellent.

4. The proponents used to describe if there is a significant difference between the effectiveness of the system and the status of the existing system. The proponents compare the total mean of the status of the existing system and the effectiveness of the proposed system.
5. The proponents used to describe if there is a significant relationship between the profiles of the respondents to the status of the existing system of Red Cross. The proponents used a regression linear to compare the independent variable of age and the dependent variable of the status of the existing system of Red Cross because linear regression is an approach to modeling the relationship between a scalar dependent variables and scalar independent variables.
6. The proponents used to describe if there is a significant relationship between the profiles of the respondents to the proposed system for Red Cross. The proponents used a regression linear to compare the independent variable of age and the dependent variable of the proposed system for Red Cross because linear regression is an approach to modeling the relationship between a scalar dependent variables and scalar independent variables.

The proponents use quality assurance for system evaluation to determine on how to

enhance or improve the system of Red Cross in terms of giving information about first aid and disaster preparedness and interacting with other user. Quality Assurance is a process-centered approach to ensuring that a company or organization is providing the best possible products or services and focuses on enhancing and improving the process that is used to create the end result, rather than focusing on the result itself. Among the parts of the process that are considered in Quality Assurance are Correctness, Reliability, Efficiency, Testability and Portability.

Correctness – The proponents test the correctness of the proposed system for Red Cross. Correctness is the ability of the software to perform the exact tasks and the output for every function in the system.

Reliability - Is the ability of a person or system to perform and maintain its functions in routine circumstances, as well as hostile or unexpected circumstances. This may include frequency and severity of failure, predictability, accuracy, and mean time between failures (MTBF).

Efficiency – In this phase the proponents test the efficiency of the proposed system for Red Cross this include the efficiency of the system to execute and output the consistent result, characteristics , forms or modules in the system

Testability – The ability to verify and examined the modularity, simplicity, and audit ability. Verifying and examining the quality and condition of the system enables the system to divide into smaller parts.

Portability – The ability of the system to run in different browser and still have the same output and the view clear result in modules or forms.

Evaluation Criteria

A Likert item is simply a statement which the respondent is asked to evaluate according to any kind of subjective or

objective criteria; generally the level of Poor or Excellent.

For the evaluation criteria the above standard are a sample of a likert scale.

Instruments and Techniques Used

This will list all the software and the techniques use enable for the proponents to create the proposed software.

Library Research

The proponent conducts a library research to further understand the problem of their research work. Survey Questioner

The proponent use survey questioner to gather the result of the respondents about the effectiveness of the proposed system to the existing system of Red Cross.

PHP: Hypertext Preprocessor

The proponents use PHP: Hypertext Preprocessor for creating the website of Red Cross because PHP is a scripting language that is often embedded into HTML to add functions PHP allows you to collect process and utilize data to create a desired output. In short, it lets you interact with your pages, and most popular language to create a web pages and personal home page.

Visio

The proponents use Visio for creating the System Flowchart, Program Flowchart, Entity Relationship Diagrams, VTOC, Context Diagrams, Data Flow Diagrams because Visio is a drawing and diagramming program for Windows from Microsoft that includes a variety of pre-drawn shapes and picture elements that can be dragged and dropped onto the illustration. Users can define their own elements and place them onto the Visio palette. The Visio package is part of the Microsoft Office brand.

Standard and professional editions are available.

Notepad++

The proponents use notepad++ for creating or coding the website because it support syntax highlighting and syntax folding for over 50 programming, scripting and markup languages. It attempts to automatically detect the language that a given file uses, using a modifiable list of the file extension bindings. Users may also manually set the current language, overriding the extensions

default language. The program also supports auto completion for a subset of the API of some programming languages.

3 RESULTS

The function of the system is about making reservation. This may also serve as an exam for the students of College of St. John Paul II (CSJPII). Knowledge of students of HRM can be tested in this system.

Project Technical Description

This consist the Hardware, Software and Database Requirements that the proponents use and requiring the user to have enable for them to run or view the proposed software.

Table 4.0: Hardware Requirements

	MINIMUM REQUIREMENTS	RECOMMENDED REQUIREMENTS
Internal Memory (RAM)	128 MB	512 MB or higher
External Memory (Hosting)	512 MB	1024 MB or higher
Hard disk Capacity (CPU)	1 GB Space Capacity	2 GB Space Capacity
Disk Capacity (Hosting)	1 GB	5 GB or higher

Table 4.0 shows the Hardware Requirements of the proposed system specifically

Internal Memory, External Memory, Hard disk Capacity and Disk Capacity.

Table 4.1: Software Requirements

	MINIMUM REQUIREMENTS	RECOMMENDED REQUIREMENTS
Operating Systems	Vista 32 or windows XP	Windows 7 or Higher
Database	XAMPP V.1.7	XAMPP V.1.7.4
Programming language	Notepad++ 6.1.2	Notepad++ 6.1.8
Web Browser	Internet Explorer 8	Mozilla Firefox 15.0

Table 4.1 shows the Software Requirements of the proposed system specifically Operating Systems, Database, Programming language and web browser.

Database Requirement

The researchers used Xampp and MySQL database in developing the software. MySQL Database will be the storage of the information in the software. It is based on the structure query language (SQL), which is used for adding, removing, and modifying information in the database. MySQL Database is commonly used for web developing.

Project Limitation and Capabilities

Limitation

The system will consist a tutorial on how to treat and perform first aid and disaster preparedness only.

- The admin has no privilege to edit or delete the user's comments
- The system cannot track the users log and comments

Capabilities

The system can give accurate information about first aid: Bites and Strings, Bleeding (Nose Bleeding), Bone Fracture, Burns, Cut, Eye Injury, Frostbites, Painting, Resuscitate, and Sprain.

- The system can give accurate information about disaster preparedness: Earthquake, Fire, Flood and Landslide.
- The system can give suggestion on searching the topics in first aid and disaster preparedness.
- The system can add new topic about first aid and disaster preparedness
- The system can allow the user to post and create a comments and discussion

Project Evaluation

This consist the statistical result for answering the statement of the problem.

Table 4.2: Demographic Frequency Statistics of the survey questioner part I

	Frequency	Percent	Rank
.Valid 20yrs Old Below	0	0	4
21-30yrs Old	13	43.3	2
31-40yrs Old	17	56.7	1
41-50yrs Old	0	0	4
51yrs Old above	0	0	4

Table 4.2 shows profile of the respondent's in terms of age.

Table 4.3: Descriptive Statistics of the survey questioner part II Usability and Reliability

Characteristic	Mean	Interpretation
The system gives accurate information about first aid in terms of: Bites and Strings Bleeding (Nose Bleeding)		
Bone Fracture	1.67	Needs Improvement
Burns	1.57	Needs Improvement
Cut	1.40	Poor
Eye Injury	1.63	Needs Improvement
Frostbites	1.30	Poor
Painting	1.67	Needs Improvement
Resuscitate	1.57	Needs Improvement
Sprain	1.53	Needs Improvement
	1.37	Poor
The system gives accurate information about disaster preparedness in terms of: Earthquake	1.40	Poor
Fire	1.77	Needs Improvement
Flood	1.57	Needs Improvement
Landslide	1.40	Poor
	1.70	Needs Improvement
Changing and adding new records and information to the system	2.03	Needs Improvement
Total		
	1.57	Needs Improvement

Table 4.3 shows the status of the existing system of Red Cross in terms of the Usability and Reliability. This also shows that the status of the existing system of Red Cross needs for improvements in terms of usability and reliability.

Table 4.4: Descriptive Statistics of the survey questioner part II Supportability and Accessibility

Characteristic	Mean	Interpretation
The system works to any browser (ex. Google chrome, Internet Explorer, Mozilla)	4.33	Satisfactory
Is the system secured inters of: Login for the admin and the user	1.60	Needs Improvement
Registration form for the users	1.50	Needs Improvement

Storation of the records or their database	1.63	Needs Improvement
Is the system is easy to use or user friendly	4.50	Satisfactory
Total	2.71	Average

Table 4.4 shows the status of the existing system of Red Cross in terms of the Supportability and Accessibility. This also shows that the status of the existing system of Red Cross is on average in terms of supportability and accessibility.

Table 4.5: Descriptive Statistics of the survey questioner part III Usability and Reliability

Characteristic	Mean	Interpretation
The system gives accurate information about first aid in terms of:		
Bites and Strings		
Bleeding (Nose Bleeding)	4.07	Satisfactory
Bone Fracture	4.10	Satisfactory
Burns	4.13	Satisfactory
Cut	4.20	Satisfactory
Eye Injury	4.43	Satisfactory
Frostbites	4.27	Satisfactory
Painting	4.73	Excellent
Resuscitate	4.43	Satisfactory
Sprain	4.43	Satisfactory
	4.43	Satisfactory
The system gives accurate information about disaster preparedness in terms of:		
Earthquake	4.33	Satisfactory
Fire	4.37	Satisfactory
Flood	4.03	Satisfactory
Landslide	4.07	Satisfactory
Changing and adding new records and information to the system	4.13	Satisfactory
Total	3.70	Satisfactory

Table 4.5 shows the effectiveness of the proposed system in terms of the Usability and Reliability. This also shows that the effectiveness of the proposed system for Red Cross is on satisfactory in terms of usability and reliability.

Table 4.6: Descriptive Statistics of the survey questioner part III Supportability and Accessibility

Characteristic	Mean	Interpretation
The system works to any browser (ex. Google chrome, Internet Explorer, Mozilla)	3.00	Average
Is the system secured inters of: Login for the admin and the user	4.27	Satisfactory
Registration form for the users	4.17	Satisfactory
Storation of the records or their database	4.60	Excellent
Is the system is easy to use or user friendly	4.17	Satisfactory
Total	4.04	Satisfactory

Table 4.6 shows the effectiveness of the proposed system in terms of the Supportability and Accessibility. This also shows that the effectiveness of the proposed system for Red Cross is on satisfactory in terms of supportability and accessibility.

Table 4.7: Relationship between the demographic profile of the respondents in terms of age to the status of the existing system of Red Cross in terms of Usability and Reliability

Independent Variable	Dependent Variable	R Value	Interpretation	R Square	PValue	Interpretation
Age	Status of the existing system in terms of Usability and Reliability	.49	Moderately Small Correlation	.040	.029	Signific ant

Table 4.7 shows that independent and dependent variable has a very small correlation and there is no significant relationship between the independent and the dependent

variable.

Table 4.8: Relationship between the demographic profile of the respondents in terms of age to the status of the existing system of Red Cross in terms of Supportability and Accessibility

Independent Variable	Dependent Variable	R Value	Interpretation	R Square	P- Value	Interpretation
Age	Status of the existing system of redcross in terms of Supportability and Accessibility	.29	Moderately Small Correlation	.042	.036	Significant

Table 4.8 shows that the independent and the dependent variable has a very small correlation and there is no significant relationship between the independent and the dependent variable.

Table 4.9: Relationship between the demographic profile of the respondents in terms of age to the effectiveness of the proposed system for Red Cross in terms of Usability and Reliability

Independent Variable	Dependent Variable	R Value	Interpretation	R Square	P- Value	Interpretation
Age	Effectiveness of the proposed system in for Red Cross terms of Usability and Reliability	.36	Moderately Small Correlation	.051	.029	Significant

Table 4.9 shows that the independent and the dependent variable has a very small correlation and there is no significant relationship between the independent and the dependent variable.

Table 4.10: Relationship between the demographic profile of the respondents in terms of age to the effectiveness of the proposed system for Red Cross in terms of Supportability and Accessibility

Independent Variable	Dependent Variable	R Value	Interpretation	R Square	P-Value	Interpretation
Age	Effectiveness of the proposed system of Red Cross in terms of Supportability and Accessibility	.41	Moderately Small Correlation	.051	.031	Significant

Table 4.10 shows that the independent and the dependent variable has a very small correlation and there is no significant relationship between the independent and the dependent variable.

Table 4.11: Demographic Frequency Statistics of the survey questioner part IComputer Literacy question 1

	Frequency	Percent	Rank
.Valid Poor	0	0	4.5
Needs Improvement	0	0	4.5
Average	11	36.7	1
Satisfactory	10	33.3	2
Excellent	9	30.0	3

Table 4.11 shows the status of the respondent's computer literacy knowledge in Ability to use the computer software and hardware appropriately.

Table 4.12: Demographic Frequency Statistics of the survey questioner part IComputer Literacy question 2

	Frequency	Percent	Rank
.Valid Poor	0	0	4.5
Needs Improvement	0	0	4.5
Average	12	40.0	1
Satisfactory	10	33.3	2
Excellent	8	26.7	3

Table 4.12 shows the status of the respondent's computer literacy knowledge in Able to browse and navigate the World Wide Web.

Table 4.13: Difference between the proposed system to the existing system

Paired Variable	Existing	Proposed	Mean Difference	P-value	Interpretation
Existing – Proposed	2.1	4.02	1.87	.003	significant

Table 4.13 shows the significant difference of the proposed system for redcross to the existing system of redcross. This also shows that there is a significant difference between the proposed and the existing system of redcross in terms of usability, reliability, supportability and accessibility.

4 DISCUSSION

This study is an interactive information system that will help the user gain more knowledge about first aid and disaster preparedness. This will help the user aware on how to perform first aid for emergency medical cases and how to prevent damage when a calamity occurs. This study aims to develop a web based reference and computer based learning software that will provide a helpful tool or referential medium for users that are in need emergency response guidelines. The problem statement relies on understanding how does Red Cross to give knowledge about First Aid and Disaster Preparedness to the community using technology. In order to cater these problems A First Aid and Disaster Preparedness Interactive Reference System was created. A method of research strategy included a descriptive research approach. The research design refers to overall strategy that you choose to integrate the different components of the study.

Data were collected from multiple sources: Survey Questioner and Interview Guide. A system conceptual

framework for the study served as an analytical tool in data analysis. The study show that there is a significant different between the perception of the respondents and the evaluations in terms of the problem encountered in supportability and accessibility.

The proponent – researcher found out and describes how to evaluate the proposed interactive reference system. This study is an interactive learning system helps to develop and to further understand the effectiveness and efficiency of the system to the existing system of the chosen company.

The study used a survey method that the researcher creates a type of questionnaire that will answer by the respondents to help researcher find the result of the research study. The data gathered in this study were analysed using the Statistical Package for the Social Sciences (SPSS), a computer program used for statistical analysis.

Conclusion

The existing system of the red cross is lock on knowledge about first aid and disaster preparedness specifically about Bites and Strings, Bleeding (Nose Bleeding),

Bone Fracture, Burns, Cut, Eye Injury, Frostbites, Painting, Resuscitate, Sprain, Fire, Flood, Earthquake and Landslide.

The proposed first aid and disaster preparedness interactive reference system will help the user to understand more on how to treat and perform first aid and disaster preparedness. This will also be a way of giving their thought and insight on a particular topic in the system or share their knowledge in a particular topic that will benefit the user.

Recommendation

In the view of the findings and conclusions, the following recommendations are hereby given:

1. The system must be implemented to the Red Cross.
2. To have further enhance to the modules of existing system of Red Cross.
3. To have a first aid tutorial with the sub topics bites and stings, bleeding (nose bleed), bone fracture, burns, cut, eye injury frostbites, fainting, sprain and for disaster preparedness with the topic of earthquake, fire, flood, landslide in the existing system of Red Cross.
4. To have a access to the employee of Red Cross into the existing system.
5. To grant an access to the existing system for the volunteer of Red Cross.
6. To have updated information about the topics that would help them to have enough knowledge in performing medical task.

7. To have additional features that will develop and provided such as video, posting comments as discussion etc.
8. Enhancement of user interface.

The proponents recommend this to everyone who needs help to have knowledge about the said medical task. This study is a basis for the future researchers that also have the idea to improvement.

References:

Book

1. James A. Blackman (2009) Microsoft Encarta Premium International Journal of
2. Information Technology and Knowledge Management (Volume 5, No 2, pp. 319 - 321) Internet Sources
3. March 2011 “About emergency life support” Bupa’s Health Information Team once published an article about Emergency Life Support in this site:
4. http://www.bupa.co.nz/fact_sheets/Factsheet.aspx?fs=cnt_abcfirst.html.
5. eMedicineHealth (2013) experts for everyday emergencies from the site:<http://www.emedicinehealth.com>
6. 1998-2013 Mayo Foundation for Medical Education and Research from the site:
<http://www.mayoclinic.com>
7. Emergency Life Support in March 2011; this article was found in the site
http://www.bupa.co.nz/fact_sheets/Factsheet.aspx?fs=cnt_abcfirst.html Appendix A
Recommendation Letter