**CHAPTER III**

**METHODOLOGY**

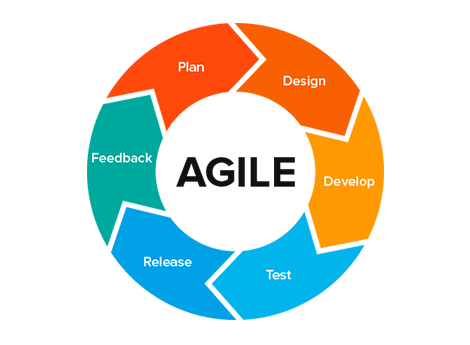
This chapter includes the researchdesign and **s**oftware development which is the methodology of the study.

**Research Design**

The descriptive research design was employed in this study. Specifically, the study gathered quantifiable information as to the acceptance level of the website users. Data were collected from a set of respondents using survey method. The respondents were the website visitors who are students, faculty and non-teaching staff of CCSICT.

**Software Development Model**

The Agile Methodology was used in this study as an approach to the project management and website development. This is based on iterative and incremental development and emphasizes the rapid delivery of complete functional application components (Parody, 2018) as shown in figure 1. It consists of six phases namely Plan, Design, Develop, Test, Release, and Feedback.



**Figure 1. Agile Model**

**Plan**. In this phase, the current structure of CCSICT, the locale of the study, was analyzed to determine the starting point and actual state of processes. Interview and observation was initially undertaken for this purpose. Figure 2 presents the Data Flow Diagram that was used to illustrate the existing process on the current structure of the CCSICT website which served as basis in providing solutions.

**DFD**

**Figure 2. Data Flow Diagram of the Existing CCSICT Website Structure**

From these, suggestions for improvement were noted for process optimization. Study objectives and system requirements were then formulated and technologies were identified.

**Design**. In this phase, system requirements were translated into design models. Use Case diagram as presented in Figure 2 was utilized to demonstrate the enhanced website functionalities.

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**Figure 3. Use Case Diagram for the Integrated CCSICT Website**

The integrated website for CCSICT was developed as a dynamic website, thus a database is needed. Figure 3 presents the website’s database using the Entity Relationship Diagram.

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**Figure 3. Entity Relationship Diagram for the Integrated CCSICT Website**

**Develop**. After having identified the system requirements, the development of the CCSICT website begins. The Homepage of the website was the first page developed followed by the interior pages. HTML (Hypertext Markup Language) and CSS (Cascading Style Sheet) was used in creating and designing the website elements. PHP (PHP Hypertext Preprocessor) was the scripting language used which was embedded within HTML pages to create dynamic web pages for the front-end of the website. For the back-end, MySQL was used for storing and retrieving records through queries. Adobe Photoshop CS6 was also used for enhancing graphics, WowSlider for generating interactive photo slides, and Visual Light box for creating interactive view of images.

**Test**. The website developed had undergone various rounds of testing and revisions, from unit testing to different types of web application testing. For the unit testing, individual components of the website was tested to validate that each component performs as designed. For the web application testing, the functionality, usability and compatibility testing techniques was employed before the website went live. Table 1 presents the test cases that were used to check whether the expected results were satisfied.

**Table 1. Test Cases**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Test Case ID** | **Test Scenario** | **Test Case** | **Test Data** | **Expected Result** |
| **Functionality Testing** | | | | |
| 001 | Test the outgoing links from all the pages to the specific domain under test | Click all the outgoing links from all the pages | Supply this depending on the link | Jumps to the desired page |
|  |  |  |  |  |
|  |  |  |  |  |
| **Usability Testing** | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| **Compatibility Testing** | | | | |
|  |  |  |  |  |
|  |  |  |  |  |

**Release**. After the website has satisfied all the expected results in each of the test cases, the website was published online and another round of web application testing was conducted. The same test cases were employed.

**Feedback**. After the website has satisfied all the expected results in each of the test cases both offline and online, it was subjected for user evaluation of their perceptions regarding its usefulness and ease-of-use. Feedback was likewise solicited from the users for further improvement of the website.

**USER**

**USERS**

**ADMIN**

**Figure 2. Use Case Diagram for Administrator and User of Integrated Website of CCSICT with SMS Notification**

**USERS**

**LEARNING**

**INNOVATIVE**

**CENTER (LIC)**

**Figure 3. Use Case Diagram Administrator for (LIC) and User of Integrated Website of CCSICT with SMS Notification**

**USERS**

**TraCCer**

**Figure 3. Use Case Diagram Administrator for TRacCer and User of Integrated Website of CCSICT with SMS Notification**

**USERS**

**ALUMNI DERECTOR’s**

**Figure 3. Use Case Diagram Administrator for Alumni Director’s and User of Integrated Website of CCSICT with SMS Notification**

1. **Development**

The development phase is the point where the website itself was created using open source tool. At this stage, the designer took all the different elements from the prototypes and used them to create the actual website design. The Homepage of the website was the first page built which followed by a template for the interior pages. The researchers used HTML (Hypertext Markup Language) and CSS (Cascading Style Sheet) in creating and designing the website elements. PHP (Hypertext Preprocessor) was the scripting language used which was embedded within HTML pages to create dynamic web pages and serves as the front-end of the website. For the back-end, MySQL was used for storing and receiving information and records through queries. In place of improving the design of web pages, Adobe Photoshop CS6 was used for enhancing graphics, WowSlider for generating interactive photo slides, and a Visual Light box that creates an interactive view of images.

1. **Testing Techniques**

The testing and delivery phase carries now the overall output from the development phase, which the researchers attended to the final details in testing the website. The complete functionality of forms and other scripts were tested, as well as the compatibility in viewing different browsers, ensuring that the website is optimized to be viewed properly in the most recent browser versions.

* **Usability Testing –** the technique was used to determine how user friendly the website is. Navigation buttons were tested to check the pages and broken links. Content checking was also done to make sure that all contents are usable and meaningful for the users of the website.
* **Compatibility Testing –** is a type of testing technique performed wherein the website was tested over its compatibility using different browsers and different client machines such as laptop and desktop.
* **Functionality Testing –** this technique was used by the developers in order to test all the features of the website that are functioning and to check all the database queries that are executing correctly. HTML and CSS validation was also performed to validate the site for system errors.

1. **Maintenance**

The website development and delivery is not necessarily over, one way to

bring repeat visitors to the website is to offer new contents, up to date information in the organization, and improvements to the website features. In the phase, the developers can anticipate changes and additions to the website.

**ANALYSIS MODEL**

The researchers utilized the Input-Process-Output (IPO) as the project paradigm where it states the different inputs, processes to be undertaken and outputs to be generated. As shown in figure 3, the inputs are the following; posting of school information, (history, vision, mission, core values, and facilities), uploading of downloadable form, posting update such as news, events, calendar activities and announcements. The system performs different operations and transactions including storing, deleting, viewing, updating, downloading. After the inputs are all provided, the outcome will be the development of the website.

Homepage of the website, About us, Students, Forum, Photo gallery, Download, and Contact Us. The Home page of the website is where the different features can be accessed such as College Information, College Photo Slide Show, Alumni Directory, Academic Calendar, Virtual Tour, TraCCer Information, Repository E-books, Forum Page, Web Analytics, Useful Links, College Information, SMS Notification, Announcements, Achievements, Events and calendar Activities.

**INPUT PROCESS OUTPUT**

References

Parody, L. (2018). How to Manage Modern Software Projects: Waterfall vs. Agile. Retrieved from <https://medium.com/@lizparody/waterfall-vs-agile-methodology-in-software-development-1e19ef168cf6>