



SYSTEMS APPLICATION IN THE MANAGEMENT OF ON-THE-JOB TRAINING PROGRAMS

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Abstract. The internship is a professional learning experience that offers meaningful, practical work related to a student's field of study or career interest. An internship gives a student the opportunity for career exploration and development, and to learn new skills. They may get to discover new things, familiarize themselves with the office environment, follow the processes, and explore the career path that they have chosen to study for.

At present, the ACI follows the manual procedures of undergoing an internship. Student interns must prepare, fill-out forms, and print required documents to qualify for OJT. OJT coordinator identifies companies that cater internship programs. The company assigns supervisors that will help in assisting interns during the internship period. Monitoring and checking of interns' performance must be done. Once interns successfully finished the internship, the OJT coordinator works with the supervisor to ask for the evaluation rating. Visiting and going to the company just to ask for documents burden the OJT coordinator.

The aim is to improve the process by developing a system that will modernize at the same time enhanced the way ACI handles internship programs through the Rapid Application Development method.

The Systems Application in the Management of OJT Programs has key features that include registration using SMS generated account or Google log-in, accepting students' applications online, tracking interns' progress by encouraging students to post activities that will serve as their journals, chat support to easily facilitate communications, and allowing establishments to rate students' performance.

In turn, the process will be enhanced and expanded while the role of the OJT Coordinator will be diminished. Finally, it ensures the accuracy and promptness of the evaluation result and removes the pile of documents that the previous method had produced.

Key Words: Aemilianum College Inc., Internship Management, OJT Programs, Systems Application, Training Programs, Web-Based System

INTRODUCTION

Education gives people information, training, and skills, as well as new ideas and attitudes. The world has witnessed significant growth in education over time. According to John Dewey in the study of Leshkovska and Spaseva (2016), "the individualization of the curriculum is done through certain real-life occupations as forms of experiential learning and practical "learning-by-doing" activities."

The evolution of technology has impacted every aspect of human lives from banking to the way that people communicate with each other. Technology has become an integral part of sustaining the community, and its contribution to education is therefore inevitable. Technology provides students with countless resources and aids them in the learning process. In fact, most universities and educational institutions utilize technology within their teaching methods.

Technology has made it possible for students to gain qualifications online and educate themselves through institutes that offer online courses. Learning will take place from home instead of having to pay to commute or move away to attend Universities. Working professionals can pursue further education without having to give up their full-time jobs. Being able to learn remotely has been revolutionary because it made education accessible to everyone. Technology has been an integral part of the development of education. It has transformed education and the way that people learn and retain information. It has been proven that using Information Communication Technology (ICT) in classroom management increases the students' motivation, show more interest, and become more involved in the areas they study. ICT enables the use of innovative educational resources and the renewal of learning methods, establishing a more active collaboration of students and the simultaneous acquisition of technological knowledge. The use of various online resources helps their interest in learning grows. The use of ICT in the classroom promotes students' active and participatory attitudes, allowing collaboration with students and interactivity to take place. Different ICT tools stimulate the development of the imagination and enhance creativity. When ICT is integrated into lessons, students become more engaged in their work that is because ICT provides opportunities to make teaching more fun and enjoyable the same things in different ways. Holistically, ICT in education improves engagement and knowledge retention.

According to CMO No. 104 series of 2017, "Internship is meant to provide students with the opportunity to complement their formal learning with practical knowledge, skills, and desirable attitudes and to gain hands-on experience in recognized Host Training

Establishment (HTE). A professional learning opportunity known as an internship provides students with useful, hands-on work that is connected to their area of study or career interest.

Crafted from the CHED Memorandum Order No. 104 series 2017 titled "Revised Guidelines for Student Internships Program in the Philippines (SIPP) for all Program, both public and private schools for secondary, different universities and colleges follow its policies and manuals in sending students for the internship program. Learning takes place beyond the four corners of the classroom and students must be exposed to other ways of learning new skills that can be gained through training (Caraig, 2017).

Despite technological advancements, the current system of managing internship activities in higher education institutions is still characterized by manual and ineffective procedures. This makes it difficult to assign supervisors, monitor students' activities, manage internship records, and manage the expanding number of students undergoing internship training. Training facilities and businesses have acknowledged the need to look for preventive measures to close the gap for these and other reasons. Papers may go missing, supervisors may be assigned unfairly, interns may not be properly supervised, and effective methods of managing and supervising student affairs during the internship may not always be available. Modernizing education means giving students and teachers the best learning environments possible and the necessary tools to compete in the global market.

The Aemilianum College Inc., under the direction of the Commission on Higher Education (CHED), the Legal Education Board (LEB), and other government regulatory bodies for the education industry, has been providing services to the community for more than three decades and is constantly working to produce graduates who are prepared to enter the workforce. To produce professionals who are ready to compete for different positions and choose careers that best suit their knowledge and skills, internships help in testing out the practical aspects of what they know and focus on how to do a particular job. They may get to discover new things, familiarize themselves with the office environment, follow the processes, and explore the career path that they have chosen to study for. At present, the ACI follows the manual procedures of undergoing an internship. Student interns must prepare, fill-out forms, and print required documents to qualify for OJT. The OJT coordinator identifies companies that cater internship programs. The company assigns supervisors that will help in assisting interns during the internship period. Monitoring and checking of interns' performance must be done. Once interns successfully finished the internship, the OJT coordinator works with the supervisor to ask for the evaluation rating. Visiting and going to the company just to ask for documents adds a burden to the OJT coordinator.

The Systems Applications in the Management of On-The-Job Training Programs is designed and developed to automate the process of the internship program at Aemilianum College Inc. The system's primary duties include assigning supervisors to interns and monitoring students' internship activities. When the time for the internship arrives, the system must allow students to select and assign preferred HTEs. The chance for the student to apply to their preferred HTE is provided. The system must additionally be able to save and retrieve data to view the students' secured employers, their supervisors, and the status of their internships. Interns may easily turn in their journals and other outputs online rather than having them printed, saving them money on printing costs.

The coordinator notifies all the students and supervisors to complete student evaluation forms before the training is through, as well as any other information that needs to be shared with the interns. Instead of delivering information to each supervisor individually over the phone or by mouth, the coordinator can broadcast messages to all of them by utilizing the module. This feature can contribute to process acceleration and time savings. The coordinator's responsibility is lessened because it would be simple to check, monitor, record, and manage the requirements of interns. Real-time updates would be possible, making internships easier, smoother, and more manageable for everyone concerned. Finally, it gives the HTE a way to evaluate the performance of the intern.

Specific Objectives

Specifically, aimed to:

1. Design and Develop a Systems Application in the Management of On-The-Job Training Programs with the following features:
 - 1.1. Web-Based Repository
 - 1.2. Text Support
 - 1.3. Chat Support
2. Provide modules for:
 - 2.1. Security
 - 2.1.1. Account Registration
 - 2.1.2. Authentication
 - 2.1.3. Restriction of Access
 - 2.2. Online Application of Interns to the Program with
 - 2.2.1. Checklist of required documents
 - 2.3. Submission System
 - 2.3.1. Accept submission
 - 2.3.2. Checking of the Journal
 - 2.3.2.a. Daily
 - 2.3.2.b. Monthly
 - 2.4. OJT Coordinator's
 - 2.4.1. Accept system for application to the Internship Program
 - 2.4.2. Monitoring system
 - 2.4.3. Performance evaluation
 - 2.5. Report Generation
 - 2.5.1. Endorsement letter
 - 2.5.2. Summary of Interns
 - 2.5.3. Evaluation Report
3. Evaluate the system using ISO/IEC 25010 in terms of:
 - 3.1. Functionality Suitability
 - 3.2. Performance Efficiency
 - 3.3. Compatibility
 - 3.4. Usability
 - 3.5. Reliability
 - 3.6. Security
 - 3.7. Maintainability

3.8. Portability

Phase 1: Project Planning

The first phase of the methodology covered the planning process. This process involved observation of the current process and looking into the researcher's objectives that needed to be met to produce the desired outcome. Necessary data were gathered and analyzed by the researcher. The documents gathered included the list of requirements for an internship and the evaluation form. The current internship management process was discussed by the OJT coordinator assigned along with the different Deans. Different issues and other concerns were raised during the discussion.

Phase 2: Project Requirements

The 2nd phase is the process where the project's resources were aligned with the objectives of the internship program. Gathering the project requirements effectively can lead to a higher project success rate, and cost reduction and improve the current practice of the college in terms of managing OJT programs.

The researcher conducted observation and interviews to determine the difficulties and problems encountered by the students and OJT coordinators in the conduct of the OJT program. For the innovation of the manual process, an online OJT management system was needed. All necessary data were analyzed to be used in the development of the system. Lastly, the researcher conducted an interview regarding the process of handling OJT programs. Based on the gathered information, an online system would be of great help since it lessened the burden and ease in managing the internship program at Aemilianum College Inc. When the system's application in the management of OJT programs was implemented, performance monitoring and evaluation can be easily done making the process of an internship at ease.

Identified Problems and Proposed Solutions

Based on the conducted interviews and observations, the researcher identified the following findings of the difficulties encountered by the interns and OJT coordinator in terms of the handling internship program. The table below shows the recognized problems with the manual process of the OJT program at Aemilianum College Inc. It is supported by the description to have the capacity to identify the required data for the proposed project entitled Systems Application in the Management of OJT Programs.

Table 1 - Identified Problem and Proposed Solution

No.	Problem Description	Proposed System
1.	Manpower, processing time, and physical effort are all required for the manual management of the OJT program	Provides an online system for the management of OJT programs
2.	Additional cost for printing and submission of requirements for student interns	Allow the students to upload the list of requirements online and lessen the expenses for printing and submission
3.	Difficulty in monitoring intern progress and performance. Checking must be done on-site making it an additional load for the OJT coordinator	Provide a function that allows the intern, supervisor, and/or OJT coordinator to communicate online via chat support. Feedbacking can be done online as well as providing instructions and posting announcements
4.	Collection of evaluation of student interns' performance has to be done manually and has to be filed in physical storage of documents and is time-consuming	Ease in downloading and printing of evaluation forms which can also be saved in a computer for storage.

The researcher proposed the “Systems Application in the Management of OJT Programs” to resolve the current problems encountered by Aemilianum College Inc. in managing internship programs. The proposed system has provided an efficient and convenient submission and evaluation process through the user interface, showing the necessary process concerned each type of user such as the student/intern, OJT coordinator, and company supervisor. All data were kept in the database wherein only the admin can see for security purposes; however, users can view data only of their respective concerns and functions. The users of the system have different functions, thus, viewed data and level of accessibility to the system were not the same.

Phase 3: Project Design

The 3rd phase covers the research design. It refers to the totality of the researcher’s strategy that has been used to integrate the different components of the study aligned in a logical way, and this was to ensure that it would effectively address the research problem. The project design included the blueprint for the collection and analysis of the data. In this phase, the researcher designed the proposed system that satisfied the requirements

identified in the analysis phase, and the system architecture was also established. System architecture defined the components and interfaces together with the functionalities. Details on the used computer programming languages and environments, diagrams, application architecture, platforms, data structure, algorithms, and interfaces were also established.

Fishbone Diagram

Fishbone Diagram is a process of identifying and grouping the causes which generate a quality problem, it is also known as the Ishikawa diagram.¹ It is a cause-and-effect diagram that helps managers to trace down the reasons for gaps, imperfections, variations, failures, and or defects. Thus, the fishbone diagram was been also used to group by categories the causes of other types of problems which an organization focused on.

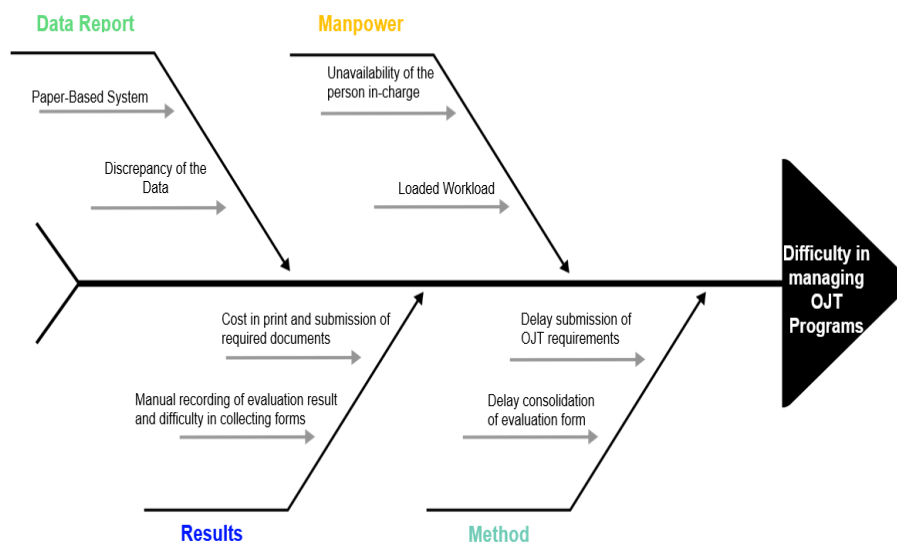


Figure 1- Fishbone Diagram

Figure 1 showed the fishbone diagram, the problems encountered in the conduct of internship management were present in the diagram. The causes were grouped into the following categories: The manpower (OJT Coordinator), data report (paper-based interaction), method (the process of evaluation), and lastly the results (final rating). The fishbone diagram helped the researcher identify the causes and effects that may happen in the implementation of Systems Applications in the Management of OJT Programs.

Functional Decomposition Diagram

Functional Decomposition Diagram is a method of analysis that separates a complex process to check its individual elements. With a large process, decomposition breaks down that process into smaller and easier ones to understand. This process was relevant to the goal of this study in determining the functional view of the internship program.

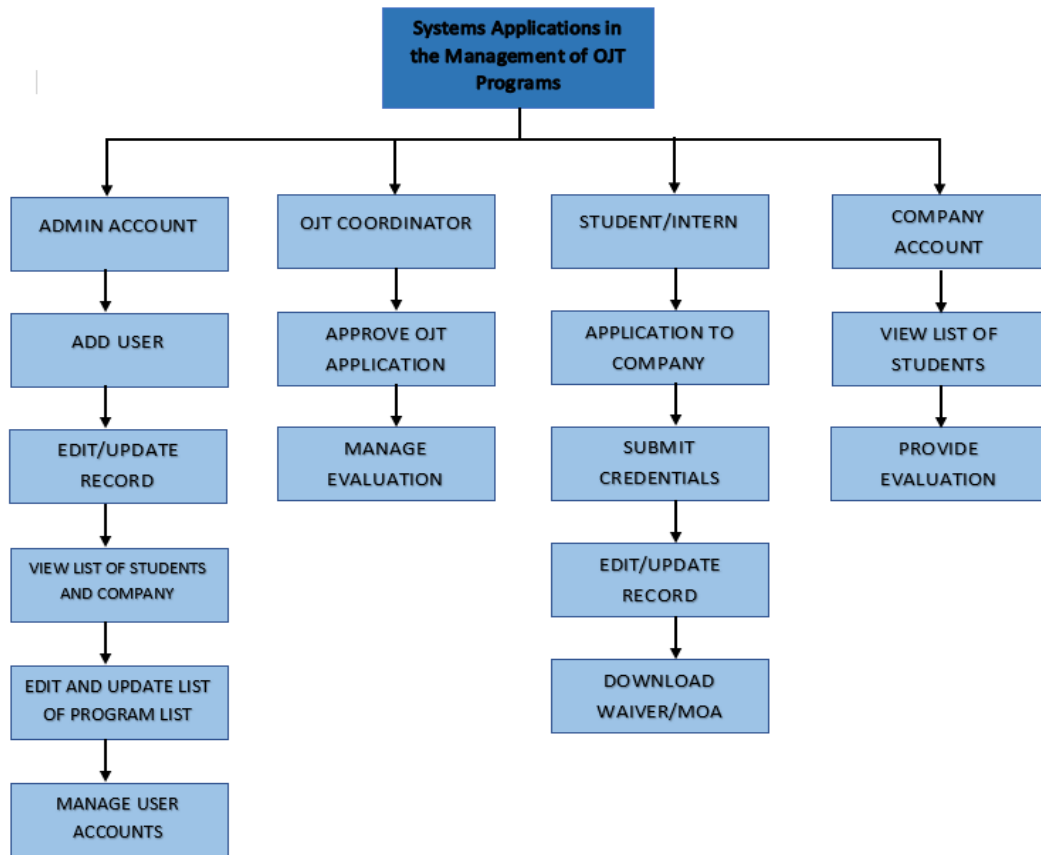


Figure 2 - Functional Decomposition Diagram

The Systems Applications in the Management of OJT Programs, a proposed system to aid the Aemilianum College Inc. in managing their internship program was depicted in Figure 2. The functional decomposition diagram showed the system’s purposes and was organized by level of relation. The system focused on the management of OJT programs from applying and complying with requirements to the evaluation of interns’ performance. It was classified into the following type of users wherein each of them has different access to the system and different functions in the application process, evaluation process, and sub-processes of each user were also shown in the diagram. Each of the users was required to log in and log out for security purposes.

Context Diagram

Context diagram also known as a level of data flow diagram was used to define and clarify the software system's boundaries. This was to establish the boundaries and context of the system to be developed, as well as the details of what was inside and outside of the system and how the system interacted with external factors. The entire software system was presented as a single process, this was also known as a high-level overview of what the system accomplished. The context diagram represented the system as a single high-level process, as well as the system's relationships with other external entities such as the system, organizational groups, and external data storage.

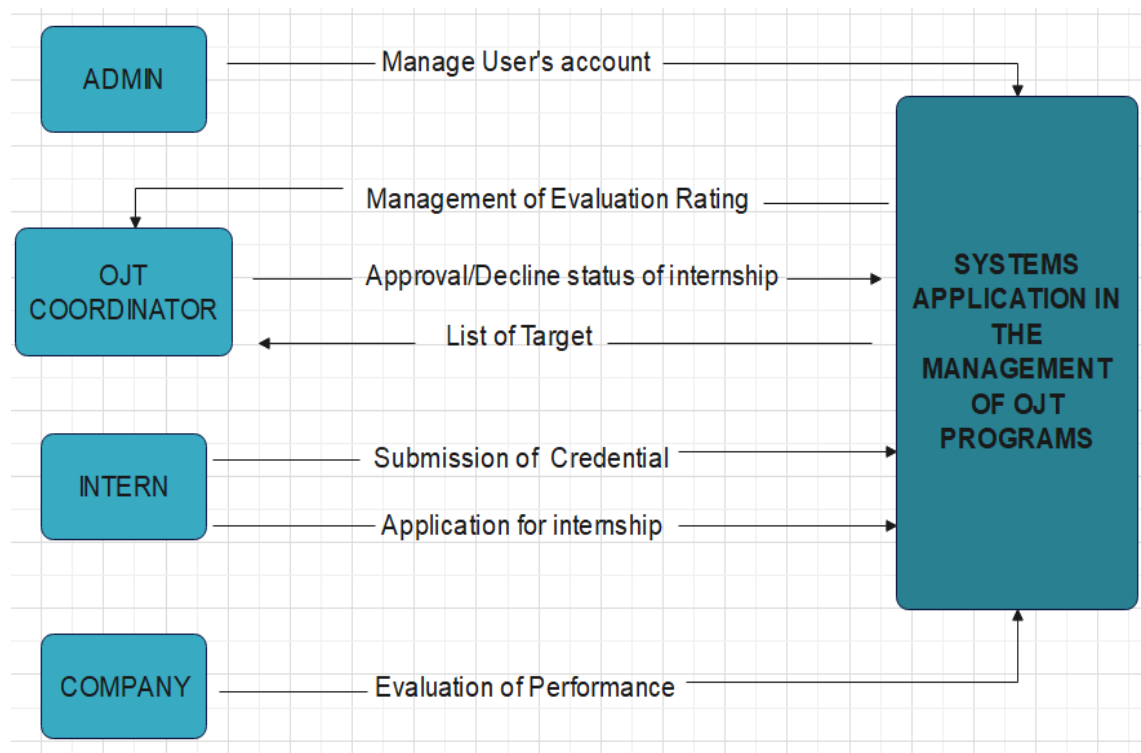


Figure 3 - Context Diagram

Figure 3 showed the process and people involved in the proposed Systems Applications in the Management of OJT Programs. Presented in the diagram was the exchange of information and activities between the systems and their users. It also showed how the users of the developed system interact with the system itself.

Data Flow Diagram

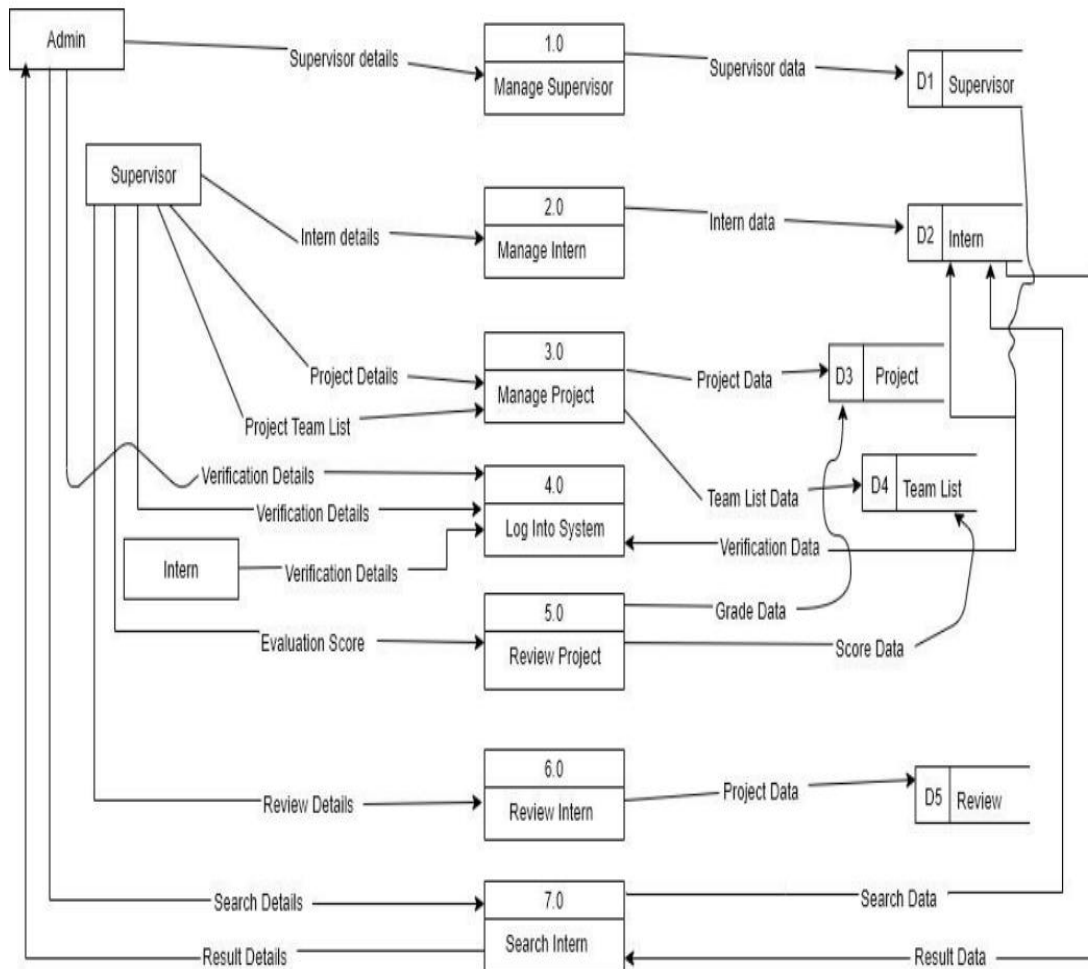


Figure 4 - Data Flow Diagram Level 0

A data flow diagram (DFD) arranges the flow of data and/or information for any system process. It shows a logical model demonstrating the processes expected from the system. It presents the input, output, and processes together with the database storage of each data.

The level 0 diagram showed the details of the system operations that are expected to happen. It was shown in Figure 4.4 in which it was divided into modules (processes). Shown in the diagram was the flow of information, and system functions that capture, store,

manipulate and distribute data between the system and its environment as well as between components. This provided a good way of communication between the user and the system developer due to its visual representation. The Level 0 data Flow Diagram of the system represented the detailed format of the context diagram wherein actual processes of the system were shown such as: create account, manage users account, manage internship process, evaluation process and generate report. Included in each process are the input and output data. The diagram above showed a broad overview of the system and let the succeeding level work down to a hierarchy of detailed diagrams, the detailed process of each module.

The following diagram showed level 1 of the data flow diagram, each module (process) was exploded to represent the specific processes within the module. This provided details on the specifics of each process in the system.

Manage Supervisor

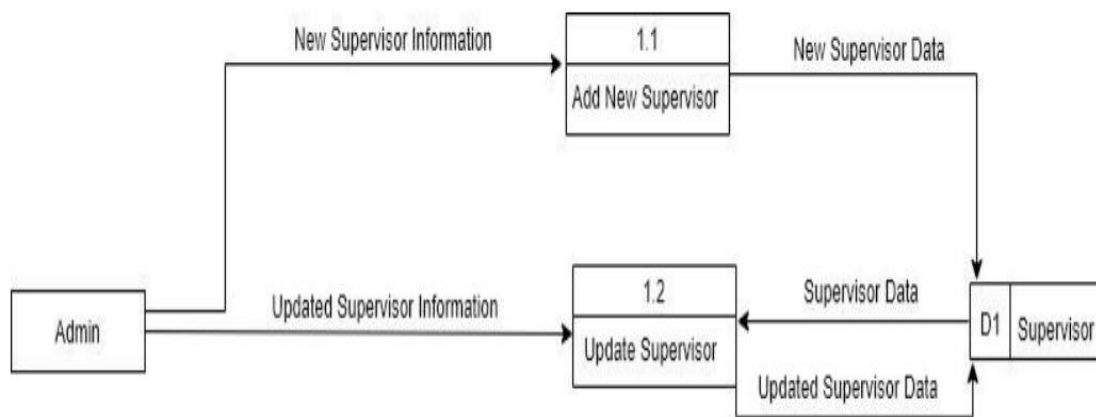


Figure 5 - Data Flow Diagram (Manage Supervisor)

Figure 5 above showed the processes for managing supervisor accounts. This diagram showed the process of communication between the supervisor and the system's application in the management of OJT Programs. Presented were the processes, data input and output, and the storage of all the data.

Manage Intern

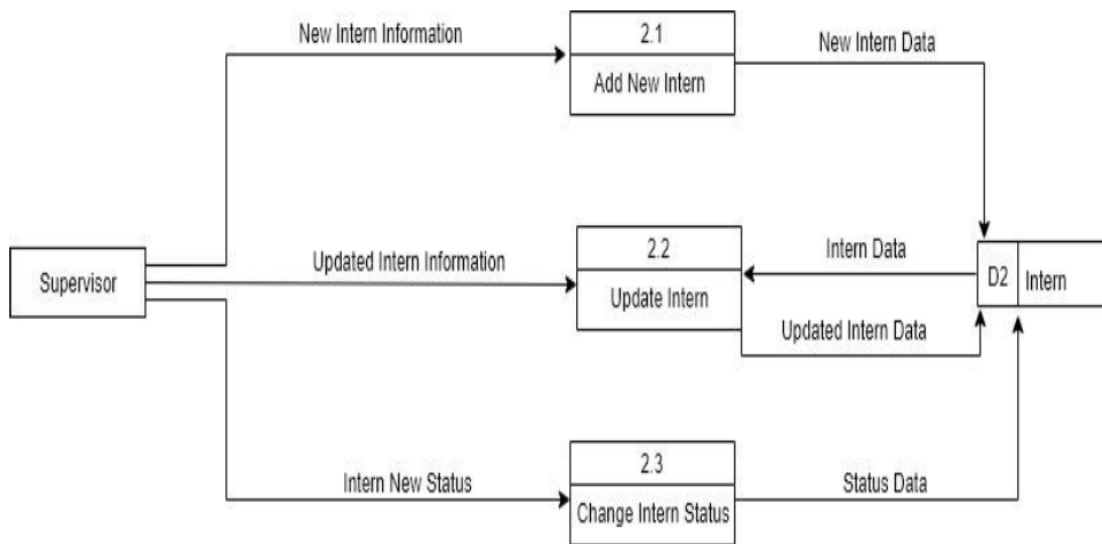


Figure 6 - Data Flow Diagram Level 1 (Manage Intern)

Figure 6 was a process presenting the role of the student/interns in managing the internship process. It included creating accounts and updating information.

Output and User-Interface Design

The user interface is part of the system that allows human-computer interaction and communication in a system/ device. It serves as the face of the system, and how the system looks are aligned with its functions. The system interface is considered one of the most important parts of the system. System users can interact and make use of the functions by clicking, filling, providing inputs, etc.4 Included in the interface were the screen displays that provide navigation through the system, the forms that capture data, and the reports that the system generated. The proposed system aimed to provide solutions to the difficulties encountered in managing the internship program. The environment and design of the system were aligned with the needs of the user and its required functions. This section showed the

output and user-interface design as well as the reports generated in the proposed Systems Applications in the Management of OJT Programs.

Login Form

The first thing that the user of the system sees was the login form. The proposed system had different types of users. User accounts were created by the system admin which was the OJT coordinator and was provided to the concerned students/interns. This was the start of the user interaction with the system and will allow them to navigate and do their respective actions.

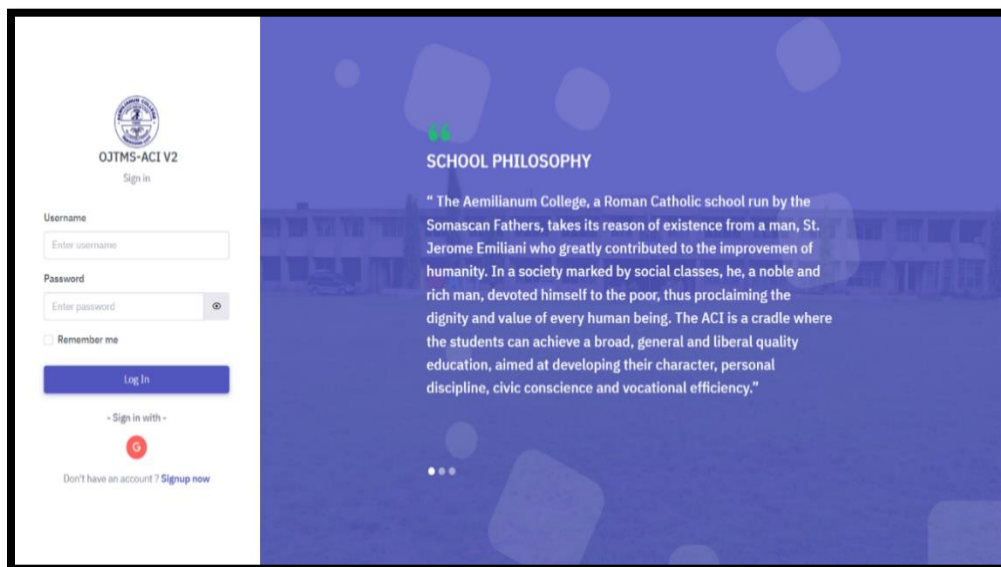


Figure: 7 - Login Form

The login form in figure 7 showed the request for login credentials such as the username and password from the user to continue with the system. Each user has their own unique login credentials once registered on the system. In case of a forgotten credential, users can ask for assistance from the system admin.

Requirement Submission Form

The submission form showed the list of requirements that needs to be submitted to undergo an internship. Coordinators were required to monitor the documents submitted by the interns.

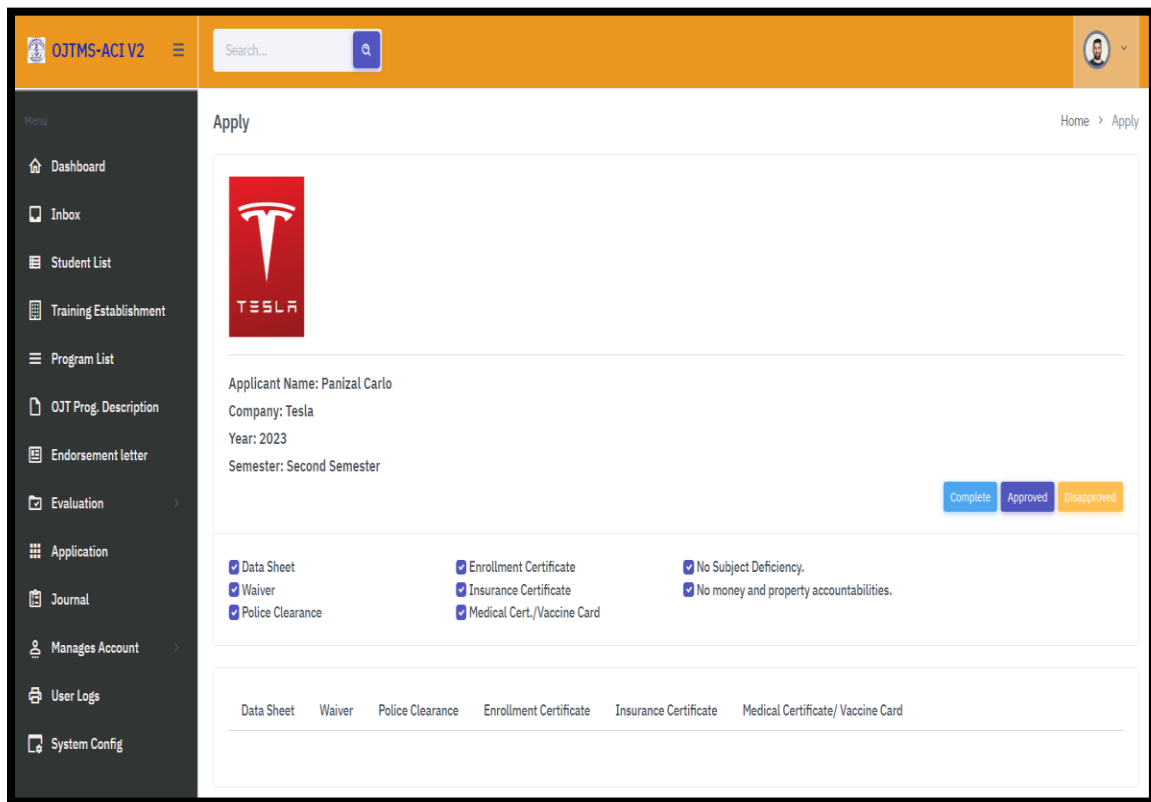
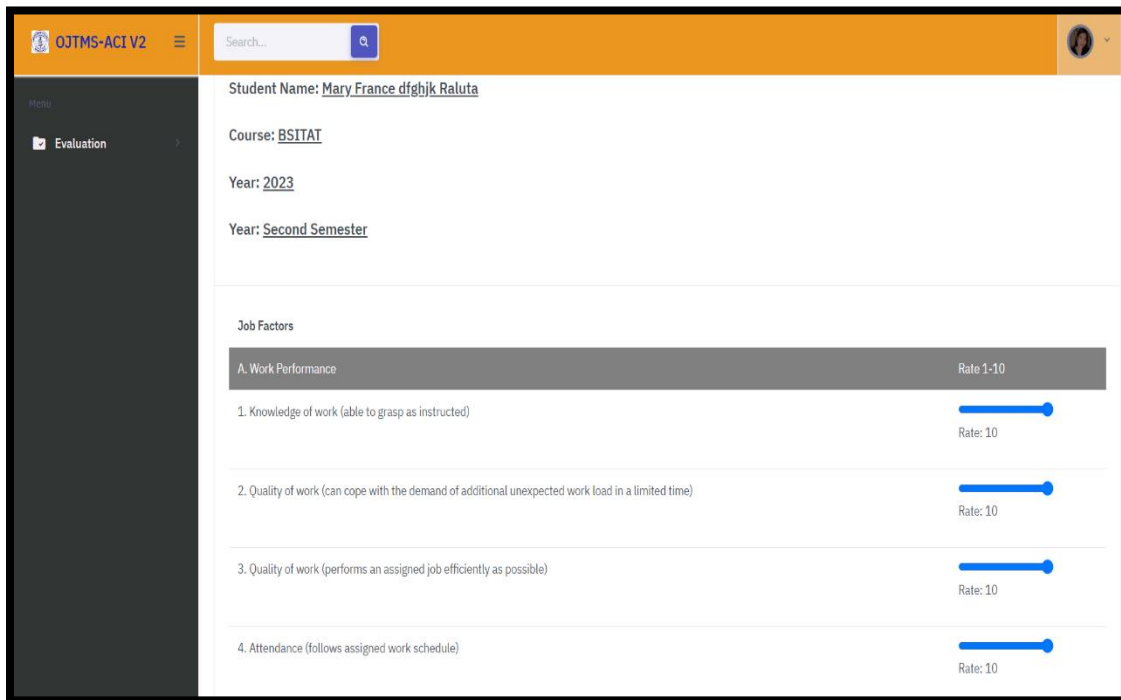


Figure 8 - Submission Form

Figure 8 showed the submission form of the intern. Once the intern successfully submitted the required documents, the OJT coordinator may now approve the application which made the intern eligible to undergo an internship.

Evaluation Form

The Evaluation form contained different criteria on how an intern's performance was rated. The rater based their rate on Job Factors such as Work Performance and Personality Traits.



Job Factors	Rate
A. Work Performance	Rate 1-10
1. Knowledge of work (able to grasp as instructed)	Rate: 10
2. Quality of work (can cope with the demand of additional unexpected work load in a limited time)	Rate: 10
3. Quality of work (performs an assigned job efficiently as possible)	Rate: 10
4. Attendance (follows assigned work schedule)	Rate: 10

Figure: 9 - Evaluation Form

Figure 9 showed the details of the Evaluation form. Supervisors may now rate the performance of the intern during the internship program.

System Architecture

System Architecture covered the sets of conventions, standards, and rules in the computer system's technical framework, and specifications that the system integrator considers in designing of integrating the system's various components such as the software, hardware, and networks. It is the structure and behavior that provides another view of the system.

Network Model

The network model explained the relationship between the user and the computer system, hardware, and connection. The network used in the proposed Systems Applications in the Management of OJT Programs is wireless network topology. In a network model, it relayed how the network nodes and connecting lines were linked. Wireless network topology is a conceptual diagram that depicted how computers link and communicate with one another when there is no physical connection between each of them, cables for example. Using a wireless connection provided a wide range of communication between users.

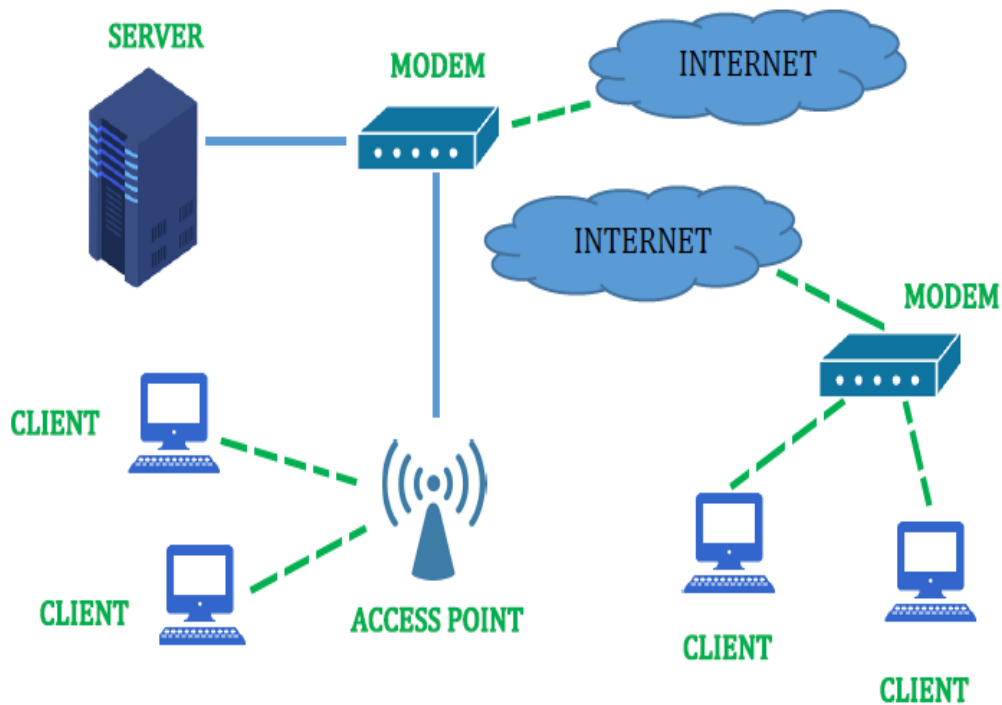


Figure10 - Wireless Network Topology

Figure 10 showed the wireless network topology of the proposed system. In a wireless network, no physical connection was required to communicate with the system and other computers as long as it was connected to the internet.

Phase 4: Project Development

Project Development is the process of designing, defining, testing as well as implementing new software applications or programs. Included in this phase is the internal development of customized systems, acquisition of third-party developed software (if any), and database system creation. Information system processing functions must be guided by written standards and procedures.

Coding

Coding was another term for the development phase of the system.⁵ The researcher of the proposed system spent time developing the system during this phase. It took months in developing and testing the system to ensure its quality and that it works appropriately, is free of error, and meets the requirements of the clients from Aemilianum College Inc. as well as the system requirements. For the development of the system, PHP, CodeIgniter, CSS, Javascript, and MySQL were used.

The researcher used PHP as the programming language since it was more applicable to the proposed system as it worked on the web. PHP (Hypertext Preprocessor) is one of the programming languages that allowed web developers to build an application and dynamic content that interacts with databases. It was basically used for developing web-based software. PHP was one of the popular general-purpose scripting languages suited to web development.

The codeIgniter framework was used in the development of the system. CodeIgniter was a PHP framework used for developing web applications. It provided out-of-the-box libraries that help in connecting databases. It created a very small footprint and full-featured web applications. It was used by the researcher since it is more appropriate to the needs and functions of the system. CodeIgniter was also open-source software, it used the Model-View-Controller architectural design. MVC was the one capable of data separation, business logic, and presentation.

In designing the proposed system, the researcher used the Cascading Style Sheets (CSS) to further style the content. CSS was a simple mechanism for incorporating a style that includes the fonts, spacing, and colors to the web content of documents. It was used to improve the user interface of the system, and to give an appropriate view of the application content.

In the database structure, the researcher used MySQL which used a client-server architecture. Its core component was the MySQL server which managed all database commands (or commands). MySQL server was made available as a standalone program to be used in a client-server networked environment, as well as a library that can be embedded (or linked) into other programs. It allowed the researcher to choose the most efficient storage engine for each table since the software can use several storage engines for each table. MySQL runs on all platforms including Linux, UNIX, and Windows. It was used in creating the database since it was most often associated with web applications. MySQL served as an important component of an open-source enterprise stack, which was called LAMP. LAMP was a web development platform that used LINUX as the operating system, Apache as the web server, MySQL as the relational database management system, and PHP as the object-oriented scripting language. MySQL operated together with several utility

programs that support the administration of MySQL databases. It was originally developed to handle large databases in a short period of time.

Phase 5: Project Testing

Testing is the process of determining the functionality of the actual software product, testing whether it meets the expected requirements, and ensuring that it is free of defects. It required the use of manual and or automated tools to evaluate one or more properties of interest by executing software/ system components. The goal of software testing in contrast to the actual requirements was to find the error, gaps, and missing system requirements.

User Acceptance

User acceptance testing was conducted and used to see whether the specification or contract's requirements were met. Physical or performance tests may be done as part of the testing process. The proposed Systems Applications in the Management of the On-The-Job-Training Program were evaluated in terms of accuracy, efficiency, maintainability, and reliability to determine their acceptability. Respondents who evaluated the Systems Applications in the Management of the On-The-Job-Training Program were given questionnaires to rate the quality of the software on a scale of 1 to 5. This test determined if the developed system achieves its goal and addresses the problems encountered in the manual or paper-based system

Phase 6: Project Deployment

Aemilianum College Inc. is open to using the proposed system in the management of the internship program because they believed that it would help the key players in facilitating the internship program including the submission of required documents to monitor interns' performance through evaluation. The end-users were glad about the implementation of the system. However, since there are policies to follow and steps to be done before a system is implemented, it will take time before the actual deployment.

Findings

1. The Systems Applications in the Management of On-The-Job-Training Programs was designed and developed by the researcher using the RAD Methodology. The system is useful in managing the OJT program at Aemilianum College Inc. Aside from that, it also supported storing and managing data and other information in the conduct of the OJT Program and allowed communication between the users through the system's chat support. It also managed account registration via SMS-embedded support or Google log-in.
2. The developed Systems Applications in the Management of On-The-Job-Training Programs provide security via account registration and restriction of access. It managed online applications and submissions of requirements. It is of great help to the conduct of OJT programs and to the OJT coordinator since the evaluation result and other needed reports such as a list of summaries of interns, waivers, and

endorsement letters will be automatically generated and accessible by the concerned personnel.

3. Based on the conducted system evaluation, the researcher determined the system and specified that it achieved the ISO 25010 level of acceptability. The functional suitability, performance efficiency, compatibility, usability, reliability, security, maintainability, and portability of the developed system were all assessed. The group of evaluators was composed of ten (10) people from Aemilianum College Inc. as the end-users, and ten (10) IT experts, one (1) OJT coordinator and Dean with an overall mean of 4.79 with a verbal interpretation of far more than what is expected.

Conclusions

After the conduct of evaluation and test performed by the end users of Systems Application in the Management of On-The-Job-Training Programs, the researcher concluded the following.

1. The Systems Applications in the management of On-The-Job-Training Programs based on the conducted system evaluation and client feedback were useful in the conduct of OJT Programs. Aside from that, account registration via SMS support was helpful for added security. Likewise, chat support for easy management of queries while undergoing an internship is deemed useful.
2. The researcher revealed that Systems Application in the Management of On-The-Job Training Programs is beneficial to the student interns of Aemilianum College Inc., particularly to the OJT coordinator in facilitating the internship. Difficulties in applying for internships, company application, student endorsement, monitoring and evaluation of internship performance.
3. The developed system passed the evaluation based on the ISO 25010 standards. Thus, it is very much acceptable and ready for deployment. It would be a great support to the faculty and students specifically in managing the internship program. There was no delay in application, submission of requirements, uploading announcements, or even evaluation of interns' performance since the data is now available online.

Recommendations

1. The system may be utilized in the conduct of OJT Programs, for easy management of queries for the internship programs.
2. The proposed system may be utilized in facilitating interns in applying for a company, endorsing students, checking and monitoring, and collecting evaluations of interns' performance.
3. The system may be installed because it passed the ISO 25010 standard model.
4. Add storage for the accomplished evaluation form and journal for future retrieval.
5. Add delete of conversation to the chat/message option.

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