**EXAMPLE TITLE ONLY: AN ABSTRACT REASONING**

**MOBILE GAME APPLICATION FOR**

**ELEMENTARY STUDENTS**

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A Capstone Project

Submitted to the Faculty of

College of Engineering and Information Technology

Cavite State University

Indang, Cavite

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In partial fulfillment

of the requirements for the degree of

Bachelor of Science in Information Technology

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**MARIA CLARA**

**JUAN DELA CRUZ**

January 2022

**EXAMPLE TITLE ONLY: AN ABSTRACT REASONING**

**MOBILE GAME APPLICATION FOR**

**ELEMENTARY STUDENTS**

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**Maria Clara**

**Juan Dela Cruz**

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| --- |
| A capstone project outline submitted to the faculty of the Department of Information Technology, College of Engineering and Information Technology, Cavite State University, Indang, Cavite in partial fulfilment of the requirements for the degree Bachelor of Science in Information Technology with Contribution No.\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Prepared under the supervision of Mr. Ace Amiel E. Malicsi. |

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**INTRODUCTION**

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This is the introduction part of your capstone project. Put all the four (4) criteria in making a good introduction. Use citation, if needed. But it is better to write your own ideas based on the topic. Just use citation to support the ideas. The section name, Introduction, is centred, bold-styled, and 3-single-space away to the manuscript ID and this paragraph.

Always use indent and spacing is 2. Arial is used and size is 11 point. Paragraphs must be justified. Section names are in boldface and in proper naming format.

**Project Context**

Discuss the background of the organization and describe its operations, products, and services offered.

In paragraph form, just identify and describe the three (3) actual, ‘solvable’ problems encountered by the organization or your beneficiary. In this research class, as already told, you were not allowed to conduct survey and interviews to gather data but you can put assumptions here. But please do not forget that this is for the course’s requirements only. Gathering valid and true data through surveys and interviews is a must when you are doing your own capstone project. Please be reminded always.

**Objectives of the Project**

Just put the general research problem and specific research problems. It can be formatted like this:

This project aims to design and develop an online enrolment system for AEM University.

It specifically aims to:

1. specific problem 1
2. xxx
3. xxx
4. xxx;
5. specific problem 2; and
6. specific problem 3

**Purpose and Description**

The project will be conducted in order to assist the school administrators in the preparation of classroom schedules as well as teaching loads of faculty members every term or semester by developing software called Classroom Schedule Generator. Once developed, the system shall automatically prepare the classroom schedules of students and teaching loads of the faculty members.

The Classroom Schedule Generator, an expert system has the following capabilities:

1. Assign classes, lecture or laboratory, in appropriate rooms. Hence, the lecture classes shall not be assigned to laboratory classrooms and laboratory classes shall not be assigned to lecture classes.
2. Maximizes room, student and faculty schedules depending on the priority set by the users. Hence, if there is a shortage of faculty member, say, only one teacher can handle a particular course, then the highest priority shall be set to faculty. On the other hand, if there is only one computer laboratory room, the highest priority shall be set to the said laboratory room.
3. xxx
4. xxx
5. xxx

Obviously, the proposed study is a response to the challenge of bringing the rural villages out of isolation by making the information society to be more about inclusion rather than exclusion. Henceforth, the study will help in alleviating the digital divide in the country if not in the whole world.

Once the web-based document management and repository system of capstone projects and theses is implemented for the Department of Information Technology in Cavite State University – Main Campus, it will give the following significance particularly to the following:

1. **Department of Information Technology** – With the proposed Document Management and Repository System of capstone projects and theses, it will help the department to organize and manage the research studies that will be submitted to them. In the future, if the Department of Information Technology decided to fully implement and acquire this Document management and Repository System of capstone projects and theses, it will be a great help for the department because it will offer solution to the problems that they acquire and it will be easier for them to manage, retrieve and store researches.
2. **Unit research coordinator** – This project will help them in making their work easier because having a systematic and structured system will help to reduce their work.
3. **Research advisers and technical critics** – This project will help them in terms of research-related concerns because it will be easier for them to manage, check and communicate with their advisees to provide guides and instruction for them.
4. **Students** – This project will help them in terms of communicating with their thesis adviser, technical critic, and Unit Research Coordinator. This project can be used by the students as a medium for passing their thesis or capstone project, and facilitate their needs so that it will be easier for them to look for resources through student outputs like capstone projects and theses that they can use for their own research projects.
5. **Researchers** – This project will help them to expand their knowledge about designing and building a system that will help to Manage, store, and retrieve theses and capstone projects from the Department of Information Technology. In addition, the researchers were able to discern the problems met by concerned students and apply the right technology and management principles that would resolve the current unsatisfactory conditions. Furthermore, it will strengthen their comprehension about how they should conduct research about a document management and repository system and what things to consider when planning a system.
6. **Future researchers** – This study will give them sufficient information in planning and constructing a Web-based Document Management and Repository system. In the future, the findings and conclusions of this project will be significant and help them if they decide to choose the same topic for their future research.

**Conceptual Framework**

Put the conceptual framework as a figure and after presenting it, put a little discussion as an overview for the framework. Here’s an example:

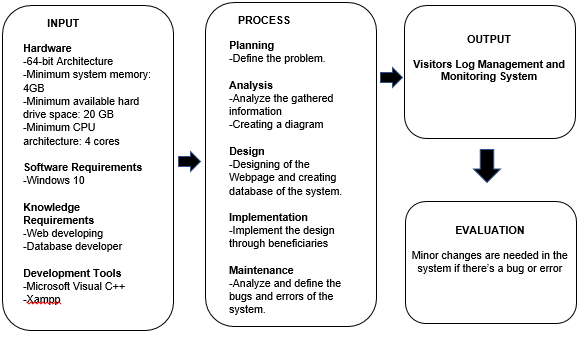


Figure 1.Conceptual framework

As what’s been told, you can provide a discussion here. You can refer to Figure 1 just like “Figure 1 shows the conceptual framework of the project.” Then just describe the whole framework.

**Scope and Limitation of the Study**

SCOPE: brief statement of the general purpose of the study, the target users and beneficiaries, the period of the study, and the features of the proposed software. Also, state the population involved in your survey and/or interview, as well as in the software evaluation; the sampling technique; and statistical tools that you will use.

LIMITATION: weaknesses of the study beyond the control of the researcher. This cannot be included if there is no such weaknesses of the study beyond the control of the researcher. Also, please indicate the area coverage, sample size, instruments to be used, among others related to your data gathering.

**Definition of Terms**

To understand the study, the below terms are operationally defined:

**Adverse mood** is the angry mood of an individual captured by the camera.

**Aggregated cameras** are the different cameras, as input devices, that capture the images of faces in the crowd.

**Crowd mood meter** refers to the software that captures and determines the mood through the determined facial expression of each subject or individual in the crowd.

**Emoji** is a circled cartooned image that resembles different facial expressions such as anger, happiness, disgust, neutral, sad, and surprise.

**Facial feature** refers to distinctive part of a face of an individual that may include eyes, nose, forehead, and mouth.

**REVIEW OF RELATED LITERATURE AND STUDIES**

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This chapter presents the review of related literature and studies underlying the framework of the study.

**Technical Background**

I will not provide a sample technical background here as it depends on your technology to use. I will just leave a sample RRLS which was already in the next section. Just give a good review of your materials. In developing this background, however, must be the same as the RRLS – just like a review with citation. The only difference is that technical background focuses on the description of the technology while the RRLS focuses on the applications which used that technology and its impact.

My sample RRLS is about barcode technology. So to write its technical background, we can describe the barcode technology entirely – what it is, how it works, etc.

**Review of Related Literature**

This is just a sample that I developed few weeks ago for my own research. This is still not final but just to give you an overview, here it is.

Kumar, Barwal, and Murthy (2015) observe that locating files is one of the hardest tasks today in most of the organizations. They claim that time is wasted doing this task. Demong, Abu Hassan, Besar, and Zulkifli (2009) show that they developed their document tracking system because it is hard for their beneficiary to locate a missing or lost file. Vitto (n.d.) emphasizes that document automation is one of the biggest effects that modern technology has on business operations.

With these problems arising in organizations, there is a technology called ‘barcode’ which is not that new to most of us.

We often see the use of barcode technology when people go to a cashier of a supermarket and are about to pay our grocery items. It is very evident that through barcode, they can do their tasks easily and efficiently.

Use of barcode is beneficial in any business settings as it can avoid the occurrence of human errors and it can make precise tracking of equipment’s location in an inventory system. Through tracking, it can reduce time spent searching for a specific equipment and/or material (Verified Label, n.d.). In addition to this, a barcode-based system can promote betterment to one’s operation in terms of speed, accuracy, reliability, efficiency, and accountability (Wasp Barcode Technologies (n.d.); Singh & Sharma, 2017). It is also because the time spent in manual tracking can be reduced by digital tracking. Barcode technologies can be one’s competitive edge in completing tasks.

Singh and Sharma (2017) explain that organizations are using barcode as a replacement to keyboard for data entry as it showcases speed and accuracy, and they aim for improvement of operational efficiency.

Kumar *et al*. (2015) provide a user-friendly file tracking system that aimed to assist the organization in tracking the movement of the files. It used Java and Oracle as development tools and IBM Web Sphere for deployment. They claimed that the file tracking system can play a vital role in any scale of business.

In a research of Demong *et al*. (2009), they developed Electronic Document Tracking System that aims to improve the document retrieval operation, as well as to track the movement of documents in and out of Faculty of Office Management and Technology (FOMT) in University Technology MARA in Malaysia. Before the development, they said that the current condition for managing and tracking documents is done manually by the staff. EDTS was developed using Apache web server, PHP, and MySQL.

In a study of Omoregbe, Azeta, Adewumi, and Edeh (2014), they developed Electronic File Tracking System (EFTS) which is an online application that allows the users from universities to manage the movement of files from one office to another. It was because they saw the locating files can be considered a big problem nowadays. This tedious work is a waste of resources especially during working hours. It was developed using UML tools, HTML 5, PHP, MySQL, and CSS. The use of the system has reduced the use of paper and made tracking of document easier in universities.

Vitto (n.d.) developed a web-based document management and tracking system for National Food Authority and aimed to improve its current situation. The system is capable of tracking document status that categorized into urgent, priority, and regular. The documents are being routed through different departments. Tracking allows the administrative head and secretary to track or monitor distributed documents within the organization and the users can also view received documents for processing. Agile was used as development methodology.

Designing barcode systems requires planning (Neese & Snodgrass, 2003). According to Singh and Sharma (2017), when implementing barcodes, it requires the use of barcode scanner and printer. Given these hardware, there is also required software that is capable of generating and reading the barcodes. In their study, they claimed that barcode systems improve efficiency of the staff and quality of services and there is a real-time data collection.

When EDTS was developed, Demong *et al*. emphasize that it gives benefits to the organizations by tracking and retrieving the documents easily ubiquitously on-line. It can provide competitive edge and effectiveness to the organization in terms of document management.

In December 2011, the Office of the Secretary of Department of Public Works and Highways released the Department Order 67 series of 2011 discussing the implementation of their document tracking system for Civil Works Projects. It required the involved offices and units to use the DTS in terms of processing documents related to civil work projects. The processing of documents starts from the preparation until approval of the assigned official (DPWH, 2011).

University of the Philippines (UP) also has their own online document tracking system that allows UP staff to track registered documents across the UP system. There is a tracking number used by a user to view the trail of that document. The system requires physical handling of documents and it mainly covers tracking feature. It is incorporated with barcode technology where offices can use it to update the status of documents. In this system, remarks are also supported for reference of the next destination/s (UPITDC, 2020).

Neese and Snodgrass (2003) say that barcode systems will not perform expected tasks without the commitment of staff. Staff must be trained to use the system and it must be ensured that the system is working properly to achieve organizational benefits.

Note: If you read this, this shows a brief overview of the barcode technology, its application on the nature of study which is document tracking, the development tools to consider, the methodologies, and implementation. So if you’re writing your review, try to reflect it from your research problems. As short as this review is enough but can be better if it is long yet more meaningful.

**Review of Related Studies**

This is also similar to what you will do in RRL. The only difference is the materials that you will use.

**Synthesis**

You have to put your justification that your capstone project is really different from your cited materials. Convince the readers that your research still has gaps from others in terms of methodology, technology, among others even if the nature of the studies is similar.

**METHODOLOGY**

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This chapter presents the materials, methods, and data gathering techniques, data analysis, and implementation plan.

**Requirement Analysis**

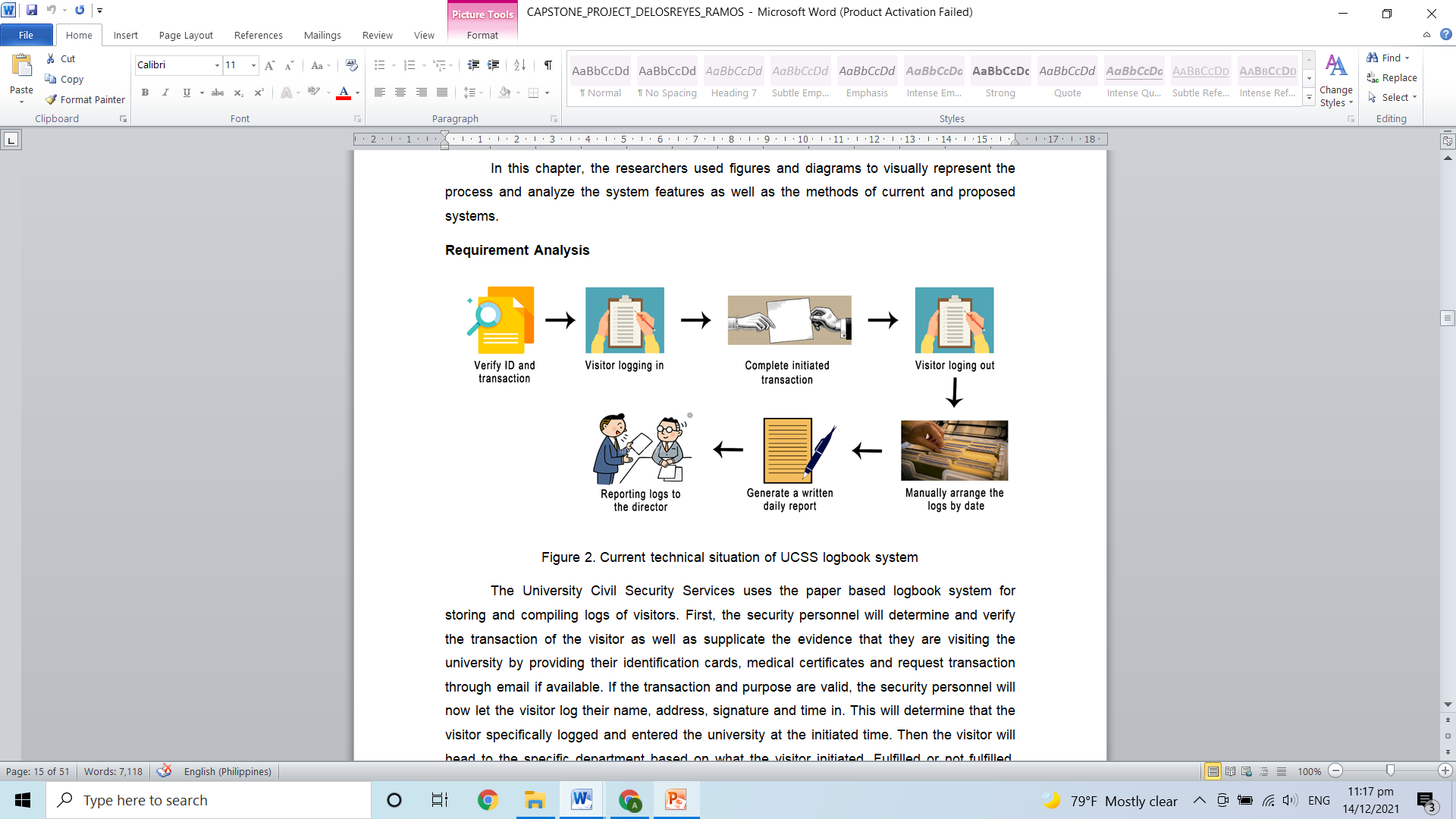


Figure 3.Current technical situation

Edcar Manpowers Services manages the salary of their employees through time card and manually computing their salary. After computing the salary, they also manually deduct benefits like SSS and PAG-IBIG. Then the secretary submits the payroll to the company. Employees can see their salary by going to the company. The reports of contribution on benefits are then submitted to their respective offices.

**Requirement Documentation**

Based on the interview conducted with the client, the following features have been agreed:

Table 1. Features of the proposed system

|  |  |
| --- | --- |
| **Main Features** | **Detailed Features** |
| Sell configured products | 1. The e-commerce system shall display all the products that can be configured. 2. The e-commerce system shall allow the user to select the product to configure. |
| Provide comprehensive product details | 1. The e-commerce system shall display detailed information of the selected products. 2. The e-commerce system shall provide browsing options to see product details. |
| Provide search feature | 1. The e-commerce system shall enable user to enter the search text on the screen. 2. The e-commerce system shall display all the matching products based on the search. 3. The e-commerce system shall display only 10 matching result on the current screen |
| Maintain customer profile | 1. The system shall allow user to create profile and set his credential. |
| Email confirmation | 1. The system shall send an order confirmation to the user through email. |
| Provide invoice for customer | 1. The system shall display detailed invoice for current order once it is confirmed. |
| Provide shopping cart | 1. The e-commerce system shall provide shopping cart during online purchase. 2. The e-commerce system shall allow user to add/remove products in the shopping cart. |

The following table, however, presents the non-functional requirements of the proposed system:

Table 2. Non-functional requirements of the system

| **QUALITY ATTRIBUTES** | **DESCRIPTION** |
| --- | --- |
| Time Behavior | The system must load within 5 seconds |
| Usability | The e-commerce system shall provide a uniform look and feel between all the web pages. |
| Accessibility | The e-commerce system shall provide multilingual support.  The e-commerce system shall be accessible by people who are color blind |
| Security | The e-commerce system shall automatically log out all customers after a period of inactivity.  The e-commerce system’s back-end databases shall be encrypted. |
| Scalability | The website attendance limit must be scalable enough to support 200,000 users at a time. |
| Compliance | The system must meet Web Content Accessibility Guidelines WCAG 2.1. |

**Software Design**

This is just a sample: After the purpose and specifications of the application are determined, the researchers will design or employ a plan for the computing solution. This includes low-level component and algorithm implementation issues as well as the architectural view.

In this stage, the preparation of the logical design, the physical design, and the user interface design will be carried out. There is also the functional and non-functional requirements which will be transformed into diagrams and charts.

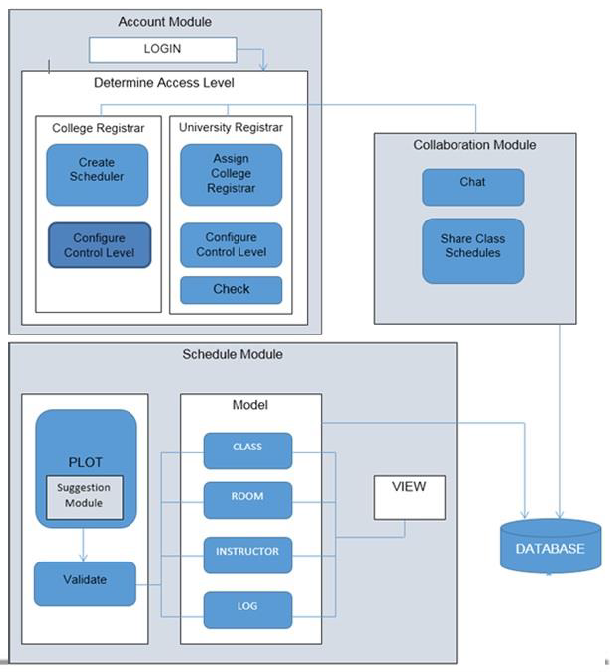


Figure 2. System architecture

The system architecture, presented in Figure 2, is composed of different modules:

**Account module.** This module utilizes an employee management that makes adding, editing, and deleting of employee information. The system also shows details of the employee such as ‘active’ and ‘inactive’, among others.

**Payroll module.** This module will create a reliable and accurate payroll system that will generate reports based on different primary keys such as employee, dates, etc. the report may include the following at the options of the users: SSS contributions, PhilHealth, Union dues, PAGIBIG, loan payment, among others.

**File Archive Mode.** This module will provide a data file archive that allows backing up of files and data records that can be exported from the database.

The architecture is divided into two (2) parts: the online and offline versions. The proposed application will accept user inputs through the use of microphone for accepting speech input; accelerometer device for the jumbling of letters to see them in a different way; and touch screen for the navigation through the game. For accepting speech inputs, the Google Speech API will be utilized for the online version while the offline version makes use of Pocketsphinx, an open-source library recognition. The audio and video cards are used for the output processes aided by the ADT plugin.

The random picking of words from the database will be done by the Fisher-Yates algorithm because the application requires different set of words every game session without repetition.

**Development and Testing**

The computer unit to be used in developing the mobile application will have the following hardware and software specification: Microsoft Windows 10 Education 64-bit operating system, 8GB DDR4 RAM, Intel Core i7-7500U CPU@ 2.7 GHz, 2904 MHz, 2-core, 4 logical processor with 6GB Intel HD Graphics and 2GB NVIDIA GeForce 920m x64-based processor. The researchers will use Construct 2 for developing the mobile application, Adobe Photoshop CS6 for graphic design, SQLite for database system, and Microsoft Word 2016 for documentation.

In the development of the software, the researchers will use Doppler Interactive Game Development Life Cycle as their guide in developing the software which is composed of six (6) phases: design, develop/redevelop, evaluate, test, review, and release (see Figure 2).

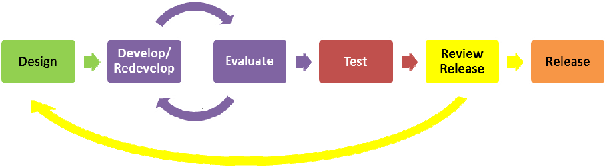


Figure 4. Doppler interactive game development life cycle (McGrath, 2011)

For the discussion, just put your chosen software development life cycle then discuss each phase on how you will take that during the development of your software/capstone project. Do not copy paste the description of the phases based on your source/s. You need to put your own description because you, as researchers, must know what and how to do your software.

For the testing part, please discuss how you will perform unit, integration, and system testing. Also, discuss the software quality standards that you will use – ISO 9126 or ISO 25010. Discuss its characteristics and how you will perform the tests.

**Data Analysis Plan**

Here is a sample of data analysis plan. This covers sampling method, instrumentation, and statistical treatment of data.

The researchers will choose the Grade 12 students and biology teachers from CvSU Science High School as their estimated population. It is because based on their academic curriculum, they are currently taking a biology subject which includes topics regarding cells. Within the population, the researchers will pick 55 students and 2 teachers as their respondents that will answer the interview questionnaire provided by the researchers. The researchers will use convenience sampling technique in choosing their respondents. Convenience sampling is a type of sampling where the first available primary data source will be used for the research without additional requirements. In other words, this sampling technique involves getting participants wherever you can find them and typically wherever is convenient. The overall simplicity and ease of research makes it more accessible for researchers (Gall, Borg, & Gall, 1996).

Survey questionnaires will be used by the researchers to answer the problems encountered by the chosen organization. The respondents will be instructed to answer the questions appropriately and to provide thorough responses. The researchers will provide spaces for the students to provide their names and signatures. It is optional for the respondents if they want to provide their names or not. The first part of the questionnaire contains three questions that corresponds to the understanding on certain topics, teaching approaches or methods used by the teachers, and how static instructional materials contributes to the overall explanation of the concepts. The second part has four questions that deal with the use of microscopes - its accessibility, specifications, and the availability of other equipment that could be used in observing cells. Lastly, the third part of the questionnaire talks about the approaches used by the teachers to gain the attention of the students, the students’ overall interest regarding the topic, and the factors that causes the students to lose attention.

The researchers will use pointing system to acquire the level of agreement of the respondents on the questions in the survey questionnaire. The points to be used are:

**Table 1.** Options in each item of the questionnaire

|  |  |
| --- | --- |
| **SCORE** | **INTERPRETATION** |
| 5 | Excellent |
| 4 | Very Good |
| 3 | Good |
| 2 | Fair |
| 1 | Poor |

Table 2 shows the Likert scale that can be used to generate the overall interpretation of the mean score of each item.

**Table 2.** Likert scale

|  |  |
| --- | --- |
| **RANGE OF WEIGHTED MEAN** | **INTERPRETATION** |
| 4.51 - 5.00 | Excellent |
| 3.51 - 4.50 | Very Good |
| 2.51 - 3.50 | Good |
| 1.51 – 2.50 | Fair |
| 1.50 and below | Poor |

On the other hand, the following statistical procedures will be used to analyze the data to be gathered from System Evaluation Questionnaire. The results of the statistical procedure will determine the general perception of the respondent on the system.

Sample mean is the average score of a sample on a given variable.

Formula:

Where:

= mean

= representation of each observation from respondents

= total number of respondents

Sample standard deviation is a measure of the spread (variability) of the scores in the sample on a given variable.

Formula:

Where:

= mean

= representation of each observation from respondents

= number of respondents

= sample standard deviation

Percentage determines the frequency counts and percentage distribution of personal related variables of the respondents.

Formula:

Where:

% = percentage

f = frequency

n = total number of respondents

**Implementation Plan**

Here’s a sample discussion of an implementation plan:

The developed system will be sent to MinSCAT immediately after the revision to present it once more to the expected users. If the institution wants to adopt the system, the researchers will hand over the system together with its documentation. It will serve as a guide to the administrator who will be assigned for the system’s update and maintenance. There would be a letter of agreement that the system will be handed over to the institution freely and the researchers is no longer responsible for its update and maintenance. If the system will be implemented, the researchers will conduct several strategies. Those strategies are presented below.

Table 1.Implementation plan

|  |  |  |  |
| --- | --- | --- | --- |
| **STRATEGY** | **ACTIVITIES** | **PERSONS INVOLVED** | **DURATION** |
| Sample strategy | Sample activity | Sample person | Sample schedule |
| Sample strategy | Sample activity | Sample person | Sample schedule |
|  |  |  |  |
| Sample strategy | Sample activity | Sample person | Sample schedule |

You must know how to implement your software to the organization. So you have to formulate your own plan to implement the software.

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