**CHAPTER II**

**REVIEW OF RELATED LITERATURE AND STUDIES**

The chapter states the different literature and studies that were conducted for the research to gain familiarity that are relevant and similar to the present study.

1. **Manuel S. Rojas Elementary School (MRES)**

Manuel S. Rojas Elementary School (MRES) is a former school named San Roque. It is built in Gabaldon style where it consists of five rooms in early 1911. It is named Manuel S. Rojas Elementary School in August 11, 1972, as honor and gratitude to the Father of Cavite City.

Manuel S. Rojas Elementary School is under Barangay 54-Pechay, 58-Patola, 59-Sitaw and 56-Labanos. These barangays are located at San Roque District wherein a number of commercial establishments and the San Roque Parish Church are located.

Manuel S. Rojas Elementary School has a land area of 4, 901 sq. m. There are forty-six instructional rooms and five non-instructional rooms. It has nineteen classrooms with comfort rooms. MRES has five toilets with bowls outside the classrooms which is used mainly for those classrooms without comfort room. These comfort rooms are maintained by a helper on which services are paid by the school. The school also has a covered court which helps pupils conduct activities during Physical Education classes. It also has ancillary services such as canteen, guidance, clinic, and office works are religiously done every day.

1. **Computer Based Information System**

Due to changing environment for organizations, competition, convergence, networked, and costs. Levels of decision makers decreased in flatted organizations.

* 1. **Introduction of CBIS**

According to Al-Shakkah et. al. Computer Based Information System (CBIS) is an information system that uses computers (automated-IS), consists of: hardware, software, databases, people, telecommunications and procedures, configured to collect, manipulate, store, and process data into information become so important and highly needed. Most types of work require a high number of people, time and effort to accomplish. All jobs that were done manually a century ago have now become easier to do, as a lot of time and cost are now saved with the development of technology. Similarly, seeking data and information especially from manual reports and studies is tedious to scan through to find the necessary information.

* 1. **Importance of CBIS**

Over the past several decades computer revolutionized business efficiency by automating calculations used in transactions and managing accounts. But the advantages of computers in organizations are now going beyond efficiency of tasks, as these powerful devices continue to change the way we do business. Stay ahead of the curve and take advantage of the latest developments in computer-based information systems.

According to Mansour et. al. (2008). Computer based information system performance can be conceptualized as being a function of computer hardware and software, behavioral, structural and environmental variables.

Computer based information system (CBIS) have become increasingly important to contemporary organizations. As Steiner stated “Information flows are as important to the life and health of a business as the flow of blood is to the life and health of an individual”.

* 1. **Advantages and Disadvantages of CBIS**

Based on Allen, Greg (n.d) post in site http://www.blurtit.com/q668178.html, there are many advantages and disadvantages to computer-based information systems, the most notable of which are the following:

**Advantages:**

**Access Speeds**

A computer-based system can sort, store and retrieve data much more quickly.

**Confidentiality**

Files within a computer-based information system can be password-protected and encrypted, so that only authorized users can access the data. Manual information systems rely upon physical locks and keys to control access.

Within a manual system, it's difficult to monitor and audit those who have access to data. It also fails to allow the separation of privileges which a computer system can provide.

**Audit Trail**

It's almost impossible to track changes and additions to a manual system without yet more bulky paperwork, and management layers to oversee this additional record-keeping. Computer systems can record which user accesses which data, at what time, as well as any modifications that were made.

**Space Needed and Availability of Data**

Filing cabinets are bulky, and even a modest system could easily expand to fill a room. Whereas computer systems automatically sort data, manual systems require continual maintenance in order to retain their integrity, otherwise the system can fall to pieces very quickly.

**Redundancy**

Computer data is easy to copy, and therefore backup copies can be maintained. A manual system contains only one copy of each piece of data, unless an expensive duplication routine is followed.

**Disadvantages:**

To start-up costs are high; people’s knowledge and skills are reduced due to lack of practice. Unemployment is created because computers have taken over humans’ jobs also when there is no electricity the computer can’t operate. Backups need to be created to prevent data being lost through viruses, etc. The constant staring at the computer is bad for the operator and lastly you need to get a storage device for the memory depending on how much memory is needed.

1. **Form 137**
   1. **What is Form 137?**

According to Jacobsen et. al. (2009) Pupil’s permanent record shall be indicated in Form 137, report card (Form 138) and diploma. Aside from students personal data Form 137 contains the subjects took by the students and the grades they get from first grading to fourth grading also a final rating and remarks by teachers. Form 137 is an Elementary School Progress from grade I to grade VI and another year base on K212 added by the DepEd. It also composed of the No. of school days, No. of school days absent, No. of school days tardy, Causes, and No. of school days presents. And lastly in the bottom part of the Form 137 there is a Certificate of Transfer for the students who will be transferred from another school.

* 1. **Purpose of Form 137**

A form 137 shall be requested from the Office of the School Registrar when the student discontinues his or her studies in the School. A student filing for a Certificate of Transfer Credentials shall secure clearances from concerned offices of the School. The Certificate of Transfer Credentials, once issued, is a permanent termination of studies and may not be cancelled nor may a second copy be issued at any time. A notice of at least one week should be given by the student who wishes to secure a copy of his or her records. The Form 137 is a complete record of a student’s work in the School. Form 137 is intended to transfer credits of a student to another institution of learning or to establish eligibility for further studies of a graduate is official and may not be hand-carried, but is sent directly from the school where the student wishes to transfer credits to or establish eligibility for further studies. This Form 137 will be marked “Copy for the name of the requesting school” and will be sent only if the student has filed for a Certificate of Transfer Credentials from the school and upon receipt of the lower portion from the requesting school. The Form 137 intended for evaluation by a school for possible admission, whether for continuance of studies or for further studies, shall be marked “For Evaluation Purposes Only” and also intended for employment purposes whether complete (graduate) or not, shall be marked “For Employment Purposes Only” and lastly Form 137 is intended for other purposes, whether complete (graduate) or not, may be unofficial, without any markings, and may be hand-carried. (http://answers.yahoo.com/question/index?qid=20090406221107AAWPsqT)

1. **Student Promotion**
   1. **What Is Student Promotion?**

Student promotion is the practice of promoting a student (usually a general education student, rather than a special education student) to the next grade only at the end of the current school year. In order to promote students, the students must be evaluated by doing a test. The question of what to be evaluated should be directed first to the unit objectives and second to the material that the teacher covers to the units their teaching. Student’s must be retained to their current grade if they’ve failed the test given by the teacher and received a failing grade.

Student promotion is a report that can be back-up for the lost of form 137. In this report it’s for the whole section, the name, address, age, the total number of days in school year and the final grade can be seen. The student that has the final rating of 75 and above is the one who will be promoted while 74 below are those who failed.

**Purpose of Student Promotion.**

Neither grade retention nor social promotion is an effective remedy to address the needs of children experiencing academic, emotional, or behavioral difficulties. Teachers committed to helping all children achieve academic success and reach their full potential must discard ineffective practices (such as grade retention and social promotion) in favor of “promotion plus” specific interventions designed to address the factors that place students at risk for school failure. (www.nasponline.org.com)

1. **Security**

Security has a vital role in the development of information system. It is the method on how to secure information against any attacks and it’s also the best way to prevent loss.

According to http://www.nativeintelligence.com/ni-programs/whyaware.asp Security can't be guaranteed as Clint Eastwood once said, "If you want a guarantee, buy a toaster." The only secure system is one that's unplugged, turned off, and in a locked room.

* 1. **Importance of Security**

According to Johnson et. al. Information is not always static and often changes at its processed. The information must be protected throughout the process at all times. The importance of maintaining security and confidentiality in the workplace is that if someone was to breach confidentiality it would be extremely bad for their career and also their organizations reputation. Also maintaining security is important due to health and safety. Security means protecting the information and its systems from unauthorized access, use, disclosure, disruption, modification, or destruction.

* 1. **Password**

According to Stewart et. al (2005) the most common authentication technique is the use of passwords. Passwords can be effective if selected intelligently and managed properly. As the importance of maintaining security increases, so does the need to change passwords more frequently. The longer a password remains static and the more often the same password is used, the more likely it will be compromised or discovered.

There are two types of passwords: static and dynamic. Static passwords always remain the same. Dynamic passwords change after a specified interval of time or use. One-time passwords or single-use passwords are a variant of dynamic passwords that are changed every time they are used. One-time passwords are considered the strongest type of password, at least in concept.

1. **Programming Language**

A programming language is a formal language designed to communicate instructions to a machine, particularly a computer. Programming languages can be used to create programs that control the behavior of a machine.

* 1. ***Visual Basic***

It’s no secret that Visual Basic is the favorite programming environment of many programmers. Visual Basic introduced unheard-of ease to Windows programming and changed programming from a chore to something very fun.

According to Tyle, Lou (2009), Visual Basic is for designing and developing graphical-user interface programs easily by the programmer. It provides tool to support the design of this interface interactively by the use of menus and the mouse; it’s like clicking and dragging. Some use a command button and place it to their place within the form. If the interface has been finished it will act as a prototype but it doesn’t function so the next thing should be done is to apply code to each menus.

**6.2 *My SQL***

MySQL is an open source relational database management system. It is based on the structure query language (SQL), which is used for adding, removing, and modifying information in the database. Standard SQL commands, such as ADD, DROP, INSERT, and UPDATE can be used with MySQL.

Based on the site http://www.techterms.com/definition/mysql MySQL is a leading open source database management system. It is a multi user, multi threaded database management system. MySQL can be used for a variety of applications, but is most commonly found on Web servers. A website that uses MySQL may include Web pages that access information from a database. These pages are often referred to as "dynamic," meaning the content of each page is generated from a database as the page loads. Websites that use dynamic Web pages are often referred to as database-driven websites.

1. **Evaluation**

Evaluation is a process that critically examines a program. It involves collecting and analyzing information about a program’s activities, characteristics, and outcomes. Its purpose is to make judgments about a program, to improve its effectiveness, and/or to inform programming decisions.

***7.1 ISO 9126***

The standard is divided into four parts which addresses, respectively, the following subjects: quality model; external metrics; internal metrics; and quality in use metrics. In addition ISO 9126 standard describes a software quality model which categorizes software quality into six characteristics, the following characteristics are: functionality, reliability, usability, efficiency, maintainability, and portability.

Functionality refers to the set of attributes that bear on the existence of a set of functions and their specific properties. The functions are those that satisfy stated or implied needs.

Reliability refers to the set of attributes that bear on the capability of software to maintain its level of performance under stated conditions for a stated period of time.

Usability refers to the set of attributes that bear on the effort needed for use, and on the individual assessment of such use, by a stated or implied set of users.

Efficiency refers to the set of attributes that bear on the relationship between the level of performance of the software and the amount of resources used, under stated conditions.

Maintainability refers to the set of attributes that bear on the effort needed to make specified modifications.

Portability refers to the set of attributes that bear on the ability of software to be transferred from one environment to another.

**Conceptual Model of the Study**

This model illustrates the concepts, theories and findings involved in the development process of the proposed system.

**Figure 1.** Conceptual Model of the Study

The conceptual model illustrated on figure 1 shows the different stages of process involved in the development of the proposed system. This illustration is an IPO diagram which shows all the inputs, processes and outputs from the development process to implementation of the system.

The input stage consists of the knowledge requirement such as academic levels, student information, teacher information, student grade, student character grading, user account, student promotion criterias, and student narrative remarks. For software requirements, the researchers use the Visual Basic 6.0 for programming language and My SQL for database. Hardware requirements consist of a computer set with minimum specifications of Pentium 4 and 1GB of RAM and a printer.

In the process stage, all the procedures, steps and methods involved in development and implementation are all given including the designing of logo and icons using Photoshop and other image editor; developing user interface and coding through Visual Basic 6.); creating database structure through My SQL; setting academic level; adding and updating student and teacher information; setting student promotion criterias; encoding student grade and character grading and narrative remark; and printing appropriate reports such as Form 137 and Student Promotion Summary. System design it consists of plan and design of the system software. System development consists of steps for creating the system or flowcharting and the design of the user interface in order to complete the requirements needed. The system testing and revision will be tested to know if the system is working properly and to reduce errors that may arise in the system.

Lastly, the output stage refers to the result of the entire development which is Computerized Form 137 and Student Promotion System for Manuel S. Rojas Elementary School.

**Operational Definition of Terms**

To provide a better understanding of the terms used in this study, the following terms are theoretically and operationally defined:

**Form 137.** Itrefers to a report card that contains inventory of the subjects taken and grades earned of a student throughout his stay in the school, including transferred credits from other schools.

**Student Promotion.** Itrefers to a form used by the school for advancement in rank or level of the students.

**Computerized.** It refers to a conversion of information to a form that is stored or processed by computer.

**User-Friendly** **Interface.** It refers to a feature of program which is easy and convenient to use even though the user is not technically knowledgeable.

**ISO 9126.** It refers to the standard use in evaluating the system.