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## Philippine Public Senior High School Time Optimization of School Forms Preparation

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### ABSTRACT

It is well accepted in the Philippines that public school teachers are continually overworked. This study aims to help the classroom advisers in preparing school forms and provides solutions for time optimization to increase productivity. This study developed a system to minimize the time spent on school forms preparation. The time and motion study \*were utilized to analyze the process of creating each school form. The Project Evaluation Review (pert) and Critical Path Method (cpm) network analysis answered the number of hours spent to complete the entire process, and identified the critical activities and non-critical activities that could be completed later without delaying the process. This helped establish a standard time for the completion of each school form and detect repetitive activities. It aids operational efficiency by simplifying tasks and developing strategies. The total time initially for completing school forms was 209 hours in a school year. After implementing the PERT/CPM, the total time for completing the school form was reduced to 56.34 hours. This change in the duration of the process of finishing school forms represents a 74. 8% reduction in school forms completion time. However, the study merely reduces the completion of the school forms procedure, which is only one of the reasons for the classroom advisers' overtime work. Innovations contribute to making things easier to do, and this study demonstrates that innovation can reduce the time required to complete school forms.

### INTRODUCTION

The State recognizes teachers' critical role in nation-building and development, particularly in creating responsible and literate people, as stated in Republic Act No. 7836 Policy Statement, which is found in Article I Section 2 of the Act. The influence of educators on the lives of students and the preparation of students for the future is significant, as has been demonstrated. Many people believe that teaching is a rewarding profession, and according to Usop (2013), teaching is the most highly regarded profession in the world. A career as an educator can be a challenging one to pursue. In charge of the students, they prepare them for scenarios that they would encounter in real life. Due to the obvious rapid innovation and demand in the globe, public education is evolving, as is a portion of the educator's role. Education in the Philippines has undergone a significant shift since the foundation of the K-12 system, and educators were well-prepared to meet the challenge.

It is now necessary for an educator to cultivate and prepare specific skills in order to make learning relevant and interesting for students. For an educator to succeed in the twenty-first century, he or she must possess communication skills, learning and imaginative abilities, information media and technological abilities, as well as life and career skills. A curriculum that connects learners to the world and allows them to comprehend the challenges that our world is facing must be developed by a twenty-first-century educator. Since experts believe that a youngster can share his or her knowledge and convert it into wisdom, educators are merely information facilitators in the traditional sense. Therefore, a 21st-

century educator is highly collaborative, a lifelong learner, accountable and responsible for results, as well as informed about information, media, and technology (Simbillo, 2017).

According to a study conducted in Saudi Arabia, Factors Influencing Teachers' Performance and Retention (2015) instructors are unable to relax as much as they would want due to the vast quantity of paperwork and pupils they are responsible for training. This might result in tension. Too much pressure would result in burnout as a result of an inability to meet the expectations of the job. Teachers in Sweden reported higher levels of stress-related symptoms and fatigue when compared to those in other professions, according to a study. Teacher workload was considered unreasonable by nine out of ten respondents in a 2017 survey (Jendle & Wallnas) .

Work overload is one of the factors that contribute to teacher burnout, which results in a loss of physical and emotional vigor in the educator (Malik, 2019). Longer teaching hours and the need for flawless conditions, which the job cannot provide, are two factors that can contribute to fatigue (Demirel & Cephe, 2015). There are times when teachers' tiredness has a negative impact on their ability to perform their instructional duties.

In the Philippines, it is well acknowledged that public school teachers are constantly overworked and underpaid (Esguerra, 2018). In addition to their instructional responsibilities, public school teachers are also responsible for a variety of non-teaching activities. Each and every public-school teacher, according to the Magna Carta for Public School Teachers, is expected to commit to a maximum of six hours of actual

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classroom instruction per day, which is a regular full-time teaching load. The teaching profession comprises a wide range of professional obligations, all of which frequently contribute to the impression of having a heavy load to bear. Multiple meetings that interfere with preparation time, administrative paperwork generated by management, and being subjected to ongoing reforms and changes that necessitate the restructuring of work and job responsibilities are all examples of what it is like to working in the employment landscape. There are numerous other administrative and student support obligations that are assigned to each teacher.

In today's information age, educational institutions are expected to play a crucial role in knowledge generation and the creation of learning environments, among other things. As a result, Information and Communication Technology (ICT) becomes a vital instrument in aiding this effort. In the same way that technology has transformed the world in the intervening years, our educational system must keep up (Horn, 2015). Gone from paper and pen to books and chalk and board to now having technology right outside our door, and the manner of education has never been quite the same.

Learners' lives are significantly influenced by technological advancements. It has the potential to improve educational quality, increase student achievement, and even assist children with learning disabilities in learning more effectively. The introduction of ICT opens up a slew of new opportunities and challenges for education. The possibilities for employing ICT to create and deliver educational content are well known. However, there are several applications of information and communication technologies in education that require further development (Bikfalvi et al, 2007).

The purpose of this study is to assist classroom advisers in the preparation of school forms and to propose solutions for time optimization in the process of school forms in order to boost productivity through the use of technological innovation and system development.

## LITERATURE REVIEW

Information and communications technology (ICT) refers to a wide range of technological tools and resources used to communicate and assist in the production, distribution, preservation, and administration of information. Additionally, ICT refers to any forms of computers, communication equipment, and software that are used to create, store, transmit, interpret, and manipulate data in a variety of various formats (UQ, 2002). ICT has become an indispensable part of our daily lives and can no longer be avoided.

This is due to the fact that ICT in education has emerged as one of the most successful parts of school development. This is not only for the goals of teaching and learning, but it is also for administrative reasons.

It has also been established that universities are capable of developing and constructing information systems for organizing their academic knowledge in order to assist

them in their decision-making (Sastry, 2007). To ensure the success of any educational institution's information technology operation, it is necessary to develop a comprehensive technology plan that encompasses all levels of technology users, from front-line staff to central management. The use of ICT can help to boost productivity. (Roch, 2007).

According to the findings of the study conducted by Selwood, et. al, 2005 teacher workload has been a cause of concern in the English and Welsh education systems for many years. One solution that has been offered is to make more use of ICT. The findings of the study led the teachers to conclude that ICT could assist them in reducing their workload and becoming more productive. This study also made use of designing a mechanism to assist classroom advisers in reducing the amount of time spent preparing school paperwork.

## Time and Motion Study

Since the beginning, the terms time study and motion study were used interchangeably, although their meanings have evolved over time. The purpose of the motion and time study is to improve the efficacy and productivity of employees in the workplace. The study of motion and time presents substantial difficulties. The term Time and Motion Study, refers to a broad field of knowledge that deals with the systematic determination of preferable work methods, the time required for the use of a human or a machine to perform the work according to the specified method, and the development of materials necessary to put these data to practical use.

The majority of cases, time study is used to quantify the amount of effort. According to a job or task, the time study decision is the amount of time it will take a person who has been completely trained to perform a task to complete the task, whether the worker is normal or expert. The operational time standard is a term used to describe this. It is possible to select an expert for a certain work by employing a range of methods, each of which is only appropriate in certain circumstances. Time studies include the use of a stopwatch, a Predetermined Motion Time System or Synthetic Time System," and "Work or Activity Sampling, to name a few examples. In this study, however, only the time study utilizing the Stopwatch Time Study was utilized for the time measurement.

Muhamad, et. al, 2005 showed that there are many benefits to be obtained by implementing productivity improvement effort. The mainly purpose of the implementation of motion and time study by respondent are increase productivity, job efficiency, quality improvement, reduce operation time per part, compete in local market and fulfilling market demand. The success of the of implementation motion and time study had been contributed by several success factors such as top management commitment, interdepartmental cooperation, good planning and control system, company technique capability, effective training, experienced work forces, steady fund inflow and clear product strategy.



## Project Evaluation Review Technique/Critical Path Method

Effective project management involves optimizing terms of production to reduce total project time and expense. Project managers use the Project Evaluation Review Technique (PERT) and the Critical Path Method (CPM) to split up complicated projects into sub-activities, deploy resources, and manage the project cycle to reduce the overall cost and duration of the project. PERT technique application can be recognized where CPM is the amount of time required, the level of confidence desired in predicting the time of each action. PERT and CPM can be used as references when creating a timetable to help the project's course determine delays in each step and overcome these challenges (Sari, 2018). The two methodologies are essentially time-oriented methods that lead to the determination of project time schedules.

Through using PERT technique, the planning step is intended to determine if project activities, particularly those on the critical route, will be performed on time and in accordance with the predicted schedule (Chuong, 2007). The critical path is a sequence of operations that runs through the network and involves actions that cannot be postponed for any reason whatsoever. It is designed to have the shortest feasible cycle time for the process. The critical route will provide an estimate of the time required to complete the process cycle.

A large number of studies have demonstrated that the PERT/CPM technique may make a significant contribution to the optimization of time in project management. Adegoke's study employs PERT/CPM to assess the efficiency of the process; his research demonstrates that PERT/CPM may be used to resolve quality issues in an organization. It is possible to generate significant improvements in the quality of a product by concentrating on the process that delivers the product.

Lermen et al. 2016 study shows that with the application of PERT/CPM technique in the project of the horizontal laminator production process time was reduced by 35.86%, i.e., from 520 hours to 333.45 hours. The tools also give an idea about the completing projects so that they can plan to expedite certain activities, if necessary, since the horizontal laminator is not the only equipment produced by industry. The study also that it can make a significant contribution to the optimization of the times and costs of the horizontal laminator production process, and that when applied to other Industry projects, it can lead to cost savings and even an increase in the number of projects undertaken, resulting in an increase in competitiveness.

According to a study conducted by Yuinarti et al. 2020 on optimizing production time in book printing, the real total production time required is 45.2 hours, but after implementing the PERT/CPM approach, the total production time required is only 41.5 hours. As part of this research, it is necessary to determine the real total number of hours released in school form preparation by implementing PERT/CPM in the designed system in

order to demonstrate time optimization.

## METHODOLOGY

The PERT/CPM of the network analysis method were used in this study to analyze the process of the preparations of school forms done by the classroom advisers. The methods answered the number of hours spend to complete the entire process, identified the critical activities or tasks that could delay the completion of the process and the noncritical activities that can be completed later without delaying the process. The techniques also determined the preparation of school forms are on time, behind time, or ahead of time.

The analysis of time spent each activity in the preparation of school forms such as preparing Student's Information -School Form 1 (SF1) was needed to identify the dependencies between activities that compose the whole process of preparation. It established a standard time for the completion of each school form and detect repetitive activities.

## RESULT AND DISCUSSION

According to a study conducted by David et al. 2019, teachers are also expected to assist in implementing various government programs, such as mass vaccination, community mapping, conditional cash transfers, deworming, feeding, population census, anti-drug campaigns, and electoral processes. According to the article, these administrative operations are not taken into consideration when determining public-sector staffing trends. This implies that teachers are performing administrative tasks that, while hidden from the view of standard metrics, may have a negative impact on instructional quality. It was also stated that, if instructors are to be believed, they wish to devote their time and energy to teaching. The time they have available to speak with students, provide assistance, and practice what they have learned about differentiated instruction is increased. It is widely acknowledged that teachers must spend more time with children, innovate classroom instruction, and provide more concentrated, individualized attention to students. Teachers are fully aware of this need. The most significant constraint they face is a lack of time.

The problem is a result of the amount of work that must be done, which leaves little time for actual instruction. This was a source of concern for all of the teachers who participated in the study. Various other organizations seek the participation of schools and teachers in the implementation of certain initiatives because of their efficiency in reaching large numbers of children and teens. In addition to their regular teaching responsibilities, this increases the workload of teachers.

The data and information gathered are classified as primary data and secondary data. Primary data is information derived from the findings of a study. While secondary data was obtained by reading printed materials such as research journals and reference books related to this subject, all previous research findings and articles

were required to ensure the accuracy of the information, improve interpretation and understanding, and produce high quality research. In order to conduct this study as effectively as feasible, information from Internet sources is also used.

The data collected was from the selected classroom advisers of a senior high school through convenience sampling. They were asked to provide their estimated hours spent on each identified duty and responsibilities of a public teacher.

**Table 1:** Number of hours spent of classroom advisers in a week.

Workload	Number of hours spent in a Week
Teaching students	30
Lesson preparation	8
Checking students' output	7
Counseling and mentoring	5
Preparation of school forms	6
Total Number of Hours in a Week	56

Table 1 indicates the number of hours each type of workload takes up in a typical week. Public school teachers are required to teach for six (6) hours per day and be allocated two (2) hours per day to complete administrative responsibilities, for a total of eight (8) hours per day in the classroom and office. Teachers in public schools are expected to work forty (40) hours a week on a

combination of teaching and administrative responsibilities. The average workload consists of instructing students, creating lessons, including the learning materials, verifying and recording students' output, and evaluating students' performance. It is expected of the classroom advisers to take on additional responsibilities, such as the creation of relevant paperwork, such as School Forms (SF), that must be submitted during the course of a school year.

However, according to data acquired from senior high school classroom advisers, they spent an average of fifty-six (56) hours per week. In a week, it shows that thirty-hours (30) were spent in teaching students; eight (8) hours in preparing the lesson and lesson materials; seven (7) hours in checking the outputs of all sections handled by the classroom adviser; five (5) hours in counseling and mentoring, in today's new normal education, answering and assisting the students' concern are mostly done after office hours through the messenger application; and for the preparation of the school forms, the classroom advisers spent an average of six (6) hours.

As a result of DepEd Order 4, series 2014; School Register, class advisers must prepare and submit amended school forms to the registrar for approval such as School Register (SF1), Learner's Daily Attendance Report (SF2), Books Issued and Returned Report (SF3), Promotion and Level of Proficiency Report (SF5), Learner's Progress Report Card (SF 9), and Learner's Permanent Record (SF10) are all documents that must be completed by the classroom advisers. Due to their numerous responsibilities and activities, some advisers find the additional process of

compiling and completing the forms to be burdensome. It is also noted in DepEd Order No. 11 series 2018 (Guidelines on the Preparation and Checking of School Forms) that the Department of Education believes that preparing and checking the large number of forms filed was extremely time-consuming and required a significant amount of time and effort from the classroom advisers. As a result of the pandemic, teachers' workloads are also increasing in proportion. A growing number of files and forms are being added to the mountain of paperwork that must be completed.

### Time and Motion Application

The time and motion study method were used in order to gain a better understanding of the process of producing each individual school form. This helped in the formation of a standard time for completing each school form, as well as the identification of acts that were redundant. It adds to increased operational efficiency by enhancing efficiency and generating plans for the organization.

**Table 2:** Application of time and motion study in school forms preparation

NO	Activities	Duration (Hour)
1	Data Collection and consolidation	12.67
2	SF1 (STUDENTS INFORMATION)	4.75
3	SF2 (STUDENTS' ATTENDANCE)	23.75
4	SF3 (BOOK BORROWED)	4.75
5	Grades collection and encoding	31.67
6	SF5 A	6.33
7	SF5 B	1.58
8	SF 9 (Card)	50.67
9	SF 10 (Form 137)	53.83
10	Printing	31.67
Total Number of Hours		209

Table 2 shows the detected and listed process activities, as well as their average durations. People involved in the activities were asked to estimate the time required for each activity. The total amount of time spent by the classroom adviser in a calendar year is two hundred and nine (209) hours. As a result, this number of hours contributes to the overtime work of the classroom advisers. It is critical to optimize school form preparation in order to limit the amount of overtime work performed by classroom advisers. There is a positive relationship between teacher workload and student academic achievement, according to the findings of IDDE GWAMBOMBO's study. It has been established that students' academic performance worsens as a result of the excessive burden placed on teachers in the classroom.

### PERT/CPM Application

It is possible to make an objective decision based on the results of operation research since it provides a quantitative study of the situation. It was decided to employ the PERT/CPM method of network analysis for this study in order to assess how classroom advisers went about preparing school forms. The methods provided

an answer to the question of how many hours it would take to complete the entire process, identified the critical activities or tasks that could cause the process to be delayed, and identified the noncritical activities that could be completed later without causing the process to be delayed. The procedures also determined whether or not the production of school forms was completed on time, late, or ahead of schedule. Table 3 depicts the operational relationship between the numerous operations involved in the current process of completing school forms, as shown in the case.

Table 4 shows the results of the PERT method calculations performed with the QM for Windows software. The table displays the activity time, as well as the early start time of each activity and the early finish time of each activity. It also includes the scenario of a late start as well as the

**Table 3:** Sequence and Activities Dependency Relations of School Forms Process

Activity	Description	Precedence Activity
A	Data Collection and consolidation	-
B	Sf1 (Students Information)	A
C	Sf2 (Students' Attendance)	B
D	Sf3 (Book Borrowed)	B
E	Grades collection and encoding	B
F	SF5 A	E
G	SF5 B	E
H	SF 9 (Card)	E
I	SF 10 (Form 137)	E
J	Printing	C, D, F, G, H, I

**Table 4:** Summary Calculations for PERT Method of the Existing Process of School Forms Completion

Activity	Activity Time	Early Start	Early Finish	Late Start	Late Finish	Slack
A	12.67	0	12.67	0	12.67	0
B	4.75	12.67	17.42	12.67	17.42	0
C	23.75	17.42	41.17	79.17	102.92	61.75
D	4.75	17.42	22.17	98.17	102.92	80.75
E	31.67	17.42	49.09	17.42	49.09	0
F	6.33	49.09	55.42	96.59	102.92	47.5
G	1.58	49.09	50.67	101.34	102.92	52.25
H	50.67	49.09	99.76	52.25	102.92	3.16
I	53.83	49.09	102.92	49.09	102.92	0
J	19	102.92	121.92	102.92	121.92	0

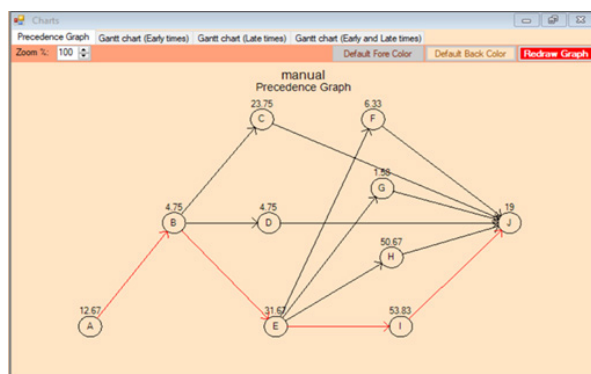
possibility of a late completion at the conclusion.

Figure 1 illustrates the network of activities involved in the current process of completing school forms. The red lines reflect the process's crucial path. The process begins with data collection from the student. The data from the SF1 is also used to complete the SF2, SF3, and grade collection. The grades collected and encoded determine the completion of SF5A, SF5B, SF9, and SF10. The activity J, which prints the school forms, is the end-goal of activities B, C, D, H, and I.

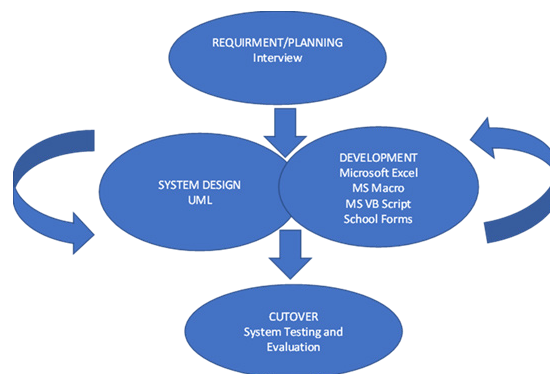
### ICT Application

The proposed solution in optimizing the existing process of school forms activities is to develop a system. The proposed developed system reduces the amount of

redundancy in the activities from the current process. The project was designed to ease the making of school forms in excel format. It was also made into consideration that it can be used in all versions of Microsoft Excel. The projects maximized the features of the Microsoft Excel like Excel formulas, macros, and visual basic script. The Rapid Application Development (RAD) methodology was employed in the project development, as depicted in figure 2. Rapid Application Development (RAD) is one of the versions of the Systems Development Life Cycle (SDLC) that tries to accelerate the application development process. RAD emerged in the 1990s as an attempt to address both weaknesses of the long development model. The use of RAD expedites the activities in each phase and aids in the improvement of



**Figure 1:** Network of Activities of School Forms Process



**Figure 2:** Rapid Application Development of the Project

understanding of system requirements.

It is necessary to review the areas that are most immediately relevant to the system as part of this initial stage. This evaluation results in a detailed characterization of the system requirements in terms of the functions provided by the system under consideration. This contains a high-level system area model of the area under consideration, a specification of the system's scope, and a cost-benefit analysis of the new system, among other things. The collecting of information, such as through interviews, is a critical component of this step. Next came the process of forming the system's concept, designing system functions, and creating early screen layouts. When developing a system, it is vital to ensure that the procedures are consistent with the requirements of the users and that the system will meet the expectations of those who will use it. (Figure 2)

## CONCLUSIONS

This research has demonstrated that CPM/PERT can be used to tackle quality issues in an organization. The most significant information for managing a project using this technique is identifying the critical path, slack time of activities, and potential trouble spots in the system. The total time initially anticipated by the PERT/CPM approach for completing school forms was 209 hours in a school year. After implementing the PERT/CPM approach in the designed system, the total time for completing the school form was reduced to 56.34 hours. This change in the duration of the process of completing school forms represents a 74.8% reduction in school forms completion time.

However, the study merely reduces the completion of the school forms procedure, which is only one of the reasons for the classroom advisers' overtime work. Although the optimization of completing the school forms helps a lot and reduces the load of completing the task, it does not mean that the classroom advisers are already free of the overtime activity. There are still other aspects to the classroom advisers' overtime work.

## RECOMMENDATION

According to the findings of this study, innovation contributes to making things easier to do. As a result, this study demonstrates that innovation can reduce the time required to complete school forms. It is recommended that another study be conducted to determine whether innovation can be applied to other tasks performed by teachers in order to help reduce the time required to complete other tasks and thus reduce the need for overtime work.

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