CHAPTER 5

Summary, Discussion, and Suggestion

Research of data and technology information system development for monitoring, supervision, and evaluation in basic educational level. The objectives of the study are as follows: (1) to study the problem and requirements of data and information technology in monitoring supervision, monitoring and evaluation of learning in basic education. (2) to study the knowledge associated with the development of data and information technology system for the inspection supervision. and evaluate learning in basic education. (3) to develop the data and information technology system for the inspection supervision, monitoring and evaluation of learning in basic education. (4) to study the use of data and information technology system for inspection, supervision, monitoring and evaluation of learning in basic education. In this research use the research and development model cycle of Walter R. Borg (Walter R. Borg, 1965) 10 steps.

Population was the teachers, administrators and personnel of basic schools, and the samples fellow the purpose of research in each step. Step 1 study of the problems and requirements of data and information technology for monitoring, supervision, and evaluation of learning. The population was administrators, teachers, and educational personnel in basic schools amount 261 educational areas (Primary 183 areas, Secondary 78 areas). The researcher used cluster random sampling 1 educational area. It was Chiang Mai Primary Educational Area 1. Then researcher used simple random, sampling every school in Chiang Mai Primary Educational Area 1. There was 79 schools in the samples. Each school was one sample, there was 79 persons in the samples. Step 2 study of knowledge to develop, data and information technology for the monitoring, supervision, and evaluation of learning. The samples in this process, on the study of documents and other researches the samples were the textbooks and other researches amount 50 titles. And on study of interviews and group focus, researcher selected purposive sampling of the experience in the measurement and evaluation, and

information systems management for at least five years in basic educational schools. The selected sampling from every school size. The small size, medium and large school size amount 3 schools. Each school size included 3 persons from registrar, head of measurement and evaluation, and academic administrators. Consolidation among 27 persons to find the principles of data and information development. Step 3 development of data and information technology system, researcher designed the system and program development for measurement and evaluation work, academic affair work, registration work, and website to present information for monitoring supervision, and evaluation of learning with user's manual to use the system, in Preliminary Testing the samples were the users in different group in 3 rounds. The samples in the Preliminary Field Testing consisted of 3 schools in the small, medium and the large school size. The simple random sampling was applied to get data from each school consisted of teacher, head of academic affair, registrar, and school administrator amount 4 persons, including 12 samples. The samples in the Main Field Testing consisted of 11 schools under the Chiang Mai municipal schools total samples were 30 persons. The samples in the Operational Field Testing was randomly samples from all schools in the Chiang Mai primary education area 1, there were 82 schools total samples were 93 persons. Step 4 study the effects of using the data and information technology system for monitoring, supervision, and evaluation of learning. After Operational Field Testing, researcher disseminated and extended the data and information technology system to various schools in Thailand then users evaluated the efficiency and effectiveness of the systems by using website that develop by researcher, the samples to evaluate the system amount 409 schools.

Tools used for developing data systems and information technology. There were the Database Management System program consisted of Access and SQL Server for collect data and information from the system. Research used Access database for stand alone system and SQL Server database for network system and Computer languages, There were Visual Basic language to develop the application software such as the measurement and evaluation program, academic program, and registrar program and the PHP language for website programming. Tools used for data collecting classified into the steps of the research. The tools used to study the problems and requirements for data

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and information technology system was questionnaire that researcher created in 4 parts, Part 1 Preliminary data of respondents, Part 2 was the closed-end questionnaire asking about problems in data and information in schools, Part 3 was rating scale questionnaire asking about the requirement of data and information technology in schools, and Part 4 it was the open-end questionnaire asking about the problem and requirement of data and information technology system. The corresponding index of each item was high (IOC values every item over 0.86). The reliability of problems was high (alpha=0.83), also the reliability of requirements was high (alpha=0.87). Tools used to collect data in the process of study knowledge was the record of documents and texts of the information systems and tools for interviews and focus groups was the open-end questionnaire. Tools used for data collection during development system were acceptance test (UAT) on Preliminary Field Testing and interviews, on Main Field Testing and Operational Field Testing were interview and evaluation form of the programs in measurement and evaluation program, academic program, registration program, and the website present to present data and information in schools. The corresponding index of each item was high (every item IOC=1). Tools used to collect data in evaluating the effectiveness and efficiency of the data and information technology for monitoring, supervision, and evaluation of learning were rating scale questionnaire. The corresponding index of each item was high (IOC >0.70). The reliability of efficacy was high (alpha=0.81), also the reliability of effectiveness was high (alpha=0.85).

Summary of the research.

There were 4 research objectives, the summary were as follows**.**

1. Results of study problems and requirements in data and information.

1.1 Results of study problems in data and information technology system found that the overall problems was moderate. Hardware problems were a shortage of projectors for teaching, and the speed of internet connection in schools was not fast enough. Software problems in education found that the software's overall problem were high. Including no program or software that responds to application requirements, the lack or shortage computer program for teachers to measure and evaluate the studying results, the lack of applications in academic programs, the lack website to

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provide information of schools, the difficulty and complexity of programs using. People ware problems were the registrar could not use computer to report the transcript, No worker to maintain computer, most of personnel lack the knowledge to use the program, lack of coordination between users and developer, and lack of training to use the computer program .

        1.2 Results of study requirements in data and information technology system found that the overall was high. Requirements of hardware and computer networks in all items was high. Including increased Internet speed in schools as needs, providing the computer network and made it stable, providing the modern computers with high performance in schools, supplying projectors for using in the teaching and learning process, the establishment of data and Information center. Requirements of software or a computer program in all items was high. Software requirements were development registration program, preparation the program and manual to the users, development program assisted in the measurement and evaluation. Requirements of people ware or computer users were to arrange for a computer technician in school, training teachers and staff have the knowledge, the ability to use the programs, training and workshop to users in required programs, development programming to meet the user's needs, developed the registrar can use computer to help making documents and transcripts, development teachers and educational personnel to have basic knowledge and ability in coordination between the program user and the application developer to solve problems together, and the development teachers could use program to measure and evaluate the student learning results.

        1.3 Results of gathers the requirements for data and information technology system in schools classify by academic works as follows:

        The Measurement and evaluation work requirements were: the program should develop follows curriculum B.E.2551, program should work with Excel for transfer data, the program requires assessment in 4 parts as Curriculum B.E.2551 consisted of subject evaluation, the ability to think , the character , and the results of activity development, development programs must be able to report the development of learners and can be used to print reports instead of writing by hand, programs should be designed to use data with other applications, to reduce redundant work, academic

measurement must be able to pass on to other program such as the academic and registration program.

The academic work requirements were: program should be designed to help academic affair work such as providing the timetable and student enrollment, the academic program should help the school to notify the parents like to know such as all points during the semester and final report, academic program should the reporting of student achievement, both individual courses and classes.

The registrar work requirements were: The program should help registrar in documents, and evidence of study (PP.) the same as the format of Educational Ministry, registrar should entry data or update data in every document and evident paper, program should be designed to transfer data to other applications without redundant data.

Others were : The system should be designed to assist the student affair work, consisting of all the student records accumulated, the software should help to screening student on the desired conditions, such as those with low achievement, students with behavioral problems, nutritional conditions report and The program should provide the student evaluation form (SDQ) and evaluation of emotional intelligence (EQ) due to the handmade process is quite complex so the system to help the processing.

2. The study of knowledge to develop the data and information system.

Researcher synthesis the development of data and information technology systems from many books and texts, then bring knowledge to interviews and group discussions with persons who had experience and knowledge in academic works and data information in each school to find the principals to develop the data and information system. The conclusions were as follows:

2.1 Creating central database of schools (Data Center).

Schools need to have a central database of schools (Data Center) that holds all the information of education. Consistent with the research of Nidthaya Patsornsiri , and Kanya Poolotakanon (B.E. 2548) noted that the introduction of computers to assist in the development of information systems. It can store data in the

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large volume, provides analysis, and processed quickly. It can reduce the amount of paperwork, cut people down when compared to the handmade. Especially in the field of measurement and evaluation of learning, students will be evaluated in every subjects, desired characteristics, ability to read, think critically and write. As well as the development of learners through student activities to comply with the Basic Education Core Curriculum B.E. 2551, so in the development of the system. Every school must design and prepare central database of schools for collection all the data and information of schools. In addition, schools should provide one computer to be the server for collecting of data and information, and to be the center of users to share resources each other. It effects users to work and share resources together (Share Data).

2.2 Tasks of teachers to measure and evaluate the learning results.

Principles of measurement and assessment of learning results in curriculum B.E.2551. Teachers are required to collect the achievement of learners to improve learners. Moreover, in the curriculum set to be evaluated according to the standard metrics. So should design and develop systems to measure and evaluate follows the principle. Consistent with the principles of information systems development said transaction processing systems to provide for the daily operational to increase efficient and effective (The office of Ratchathani primary education area 4, ,from website http://202.143.156.4/edplaza/, search on date Jan. 7, 2555), it can be used to produce information as their needs. The teachers are involved in the import data to measure and evaluate the students individually. And the basic core curriculum B.E.2551, teachers have obligation to measure and evaluate the learning of students in four areas of measurement and evaluation courses. Assessment the learning results, desired characteristics, the ability to think critically and write, and student activity development. Teachers are high workload, thus schools should provide programs to help reduce the workload. Especially in the report of the student development (PP.5), the book reports to develop the learner (PP.6) should be used the computer programs instead of using by hand.

2.3 Tasks of academic affair.

Because each semester school has to arrange the subjects to the teacher for teaching by using timetable or schedule enrollment. Therefore, to create a system to

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measure and evaluate the need for academic action in the matter. In addition, schools must also serve on the audit supervision, monitoring and evaluation of learning. This is consistent with the principles of quality assurance mechanisms aimed at providing education part of internal quality assurance system to provide feedback to develop and evaluate the implementation of quality assurance system. (Ministry of Education, "Quality assurance of education is basic education", Journal 13, No. 1, January-March, pp. 30-35).

2.4 Tasks of registrars.

Registration of schools serving students in recording information. Since the enrollment and details. Documents and evidence to be used in the study. In principle, measurement and evaluation of the program in curriculum B.E.2551 (Ministry of Education, 2553), therefore, requires data and information of all learners. Both the history Information from the measurement and evaluation of teachers and reports of academic achievement. In addition, the development will need to be flexible sych as the program can import data from external in the future, if there is a change of curriculum, the system should still valid.

2.5 Quality assurance in education.

Education law requires that all schools in the country must have quality assurance. The record of quality assurance within a year for internal assurance and external quality assurance within every five years. The quality assurance process are the process of the inspection supervision, monitoring and evaluation of learning. In ensuring the quality of education requires a study of data and information. The assessor will need to gather information and evidence to confirm the reality of developing quality educational institutions as reported in the self-assessment report and evidence that reflects the reality that is not in the self-assessment report. (Office for National Education Standards and Quality Assessment, 2555), so the system should design and develop to help assess learners metric standards, reduce the load on the system of redundant data and information derived from operating normally which reflects the authentic assessment. Also, be prepared to present information of students to parents and the community has been aware of the operation of the schools.

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2.6 Creating computer network in schools.

Since each academic agencies of schools need to work together, exchange information with each other. Thus, schools should design a computer network in the schools. Currently, computer networking costs are not high. Schools only supply switching HUB and connect each computer to the device. Then set the IP address to each of the computers in the same group. It makes individual computers can communicate, exchange information with each other. Database management system needs to have the information shared by the control center. Controlled using a central database. Database system can support the work of different people. (Ministry of Education, 2549).   If any school with the availability of computer networks can supply a server and configure a static IP (Fixed IP Address) to the host machine. Install the Database Management program, set the client computer to assign a static IP or IP automatically but in the same group of server. It can cause the client to send data to a server and if there is a program developed for computer network. It can cause central database of schools produce information perfectly.

3. The development of data and information technology system.

The researcher has developed the data and information system fellow the steps of the research and development of Walter R. Borg (1965), which had 10 steps in the following order.

1) Data and Information Collection, researcher collected the problems, requirements, and knowledge to develop the system which contingency to user's requirements in schools.

2) Planning to develop the system, database was designed to collect data. The system work flow and user interface were designed to develop the system in each items. And the steps to change data into information.

3) Preliminary Form or Product was created. Researcher designed database and using visual basic language to develop programming application in measure and evaluation work, academic work, and registration work. The Programs were tested, updated, and created preliminary manual to use programs and the system.

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4) Preliminary Field Testing, researcher selected 3 schools in different size, small school, medium school, and large school to test the system, sample size amount 12 persons. While the system was testing researcher updating all programs until they worked correctly and responded their requirements.

5) Main Product Revision, researcher updated all programs for using in every basic school, protected error, and developed as user's requirements from Preliminary Field Testing.

6) Main Field Testing, researcher tried out the system in 11 schools of Chiang Mai municipal sample size amount 30 persons. After testing users evaluated programs, found that all programs working as their requirements in high level but some problems needed to solve.

7) Operational Product Revision, researcher updated all programs and classified programs as user's job and their corresponding, updated error, and updated reports as user's requirements.

8) Operational Field Testing, this experiment, researcher randomized samples from Chiang Mai primary educational area 1, amount 82 schools, sample size amount 94 persons. The results of program evaluations, found that all programs worked as their requirements in high level.

9) Final Product Revision, after every field testing, researcher updated all programs and developed system as following : 1) Classified programs into 2 system for stand alone and the network system 2) Improve programs and websites offer information to connect to the database as the system used. 3) Completed user's manual.

10) Dissemination and Distribution system, researcher distributed software to basic educational schools in Thailand amount 409 campuses. Then, users evaluated software efficiency and software effective on the web site that developed by researcher.

Summary of the data and information technology system development.

The development of the data and information technology system caused the system, consisted of

      3.1 Database for use to storage data and information by the database contains tables include such as table name TBstudent collected students data, table name TTeacher collected teacher and personnel data, table name TSubject collected courses data, and table name TScore collected assessment scores and learners data. The database were divided into two systems: Access database for the stand alone system to operate independently for medium and small schools, and SQL Server databases for work in computer networking support for large data in medium, large and extra large schools.

      3.2 The application programs for recording data, processing data, and produce information consisted of measurement and evaluation program, academic program, registration program , website to present data and information of school, and the program user's manual.

      3.3 Information for monitoring, supervision, and evaluation of the learning in basic education level. Information obtained the system in each program as follows:

      3.3.1 The information from the measurement and evaluation program were 1) Results of the evaluation of learning in each course. 2) The desired characteristics of the students. 3) The ability of reading, thinking and writing of students. 4) Learning report and course description. 5) The standard indicators of learning courses. 6) Assessment report and the results of student learning courses. 7) Time attendance of student course report. 8) reports the summary of each course. 9) Assessment report of student activity development. 10) The lists of students in each class and enrollment in courses.

      3.3.2 Information from the academic program were 1) Anecdotal reports of teachers and administrators. 2) Teaching and learning schedule in each classroom. 3) Teacher activity enroll and evaluation in each activity. 4) Calendar of the activities in the school. 5) Attendance reports of each classroom. 6) The report of the desired characteristics in each classroom. 7) The report of the reading, thinking and writing ability. 8) Report of mid-term, final in all subjects of each classroom. 9) Report of final test in all subjects. 10) Report of the achievement individually, courses, and classes.

3.3.3 Information from the registration program were 1) Statistics of students in each classroom. 2) The accumulated grades of student record (PP.1). 3) The certificate of graduation (PP.2). 4) Graduation of students in each educational level (PP.3). 5) Report of character developments of each student (PP. 4). 6) Report on the development of Students in each course (PP.5). 7) Reports the quality of the learners (PP.6). 8) Transcripts and other educational certification (PP.7). 9) Reports of student record collection (PP.8). 10) Report on the development of the students individually (PP.9).

4. Results of study in using the data and information technology system for monitoring, supervision, and evaluation of learning in basic education.

4.1 Result of the system efficacy evaluation.

The total average of the efficacy evaluation in data and information technology system was highest and the scattered coefficient was low. The averages of the efficacy evaluation were the highest, sorted descending from high to Low in the following order, academic program is easy to use, convenient, fast and works properly, registration program was easy to use, fast and works properly, the system help facilitate performance in school, the system developed helped user to work faster, save time and reduce work duplication, satisfaction with data and information technology system, the system is well worth the effort versus working by hand, measurement and evaluation program is easy to use, fast and works correctly, easy to use with a manual assembly operating procedures.

4.2 Result of the system effectiveness evaluation.

The total average of effectiveness data and information technology for supervision, monitoring and evaluation of learning was highest and the scattered coefficient was low. Effectiveness of the system were highest, sorted descending from high to low in the following order. The developed system can produce reports, documents transcript (PP.1-3) have met with the Ministry of Education, the system assist in the supervision, monitoring and evaluation of learning, academic programs work meets the academic needs of basic education, registration program work meets the requirements of registration in schools, system developed processing is required to

comply with the requirements of the core basic curriculum, program measurement and evaluation work directly with the operations and needs of teachers, and the system processing are in line with the core basic curriculum B.E.2551.

4.3 Result of using the data and information technology in basic schools.

Using of data and information technology system, Users in each program must entry data into the system, then the programs would process data and cause the information to be used for monitoring supervision, and evaluation by work as follows.

1) The measurement and evaluation work. Teachers need to record data scores, evaluation of desired characteristics, evaluation of reading, thinking, and writing, and evaluation of student development activity. Then program would process and produce information for monitoring, supervision, and evaluation of learning such as subjects achievement reporting, grades for each course, assessment results of desired characteristics, the ability to read think and write, the results of development activities and reported of student attendance, assessing students in each indicators and evaluation report, and others.

2) The academic affair work. Academic affair personnel need to records teaching subjects to teachers and enrollment data. So that teachers can use to measure and evaluate program. When the teachers record data program process data and produce information for monitoring, supervision, and evaluation of learning such as anecdotal reports, timetable of teachers individually and the student's class schedule, the mid-term and final assessment report, reports of the grades point average in each student, the learning summary measurement of all courses, academic achievement in all courses and all classes, teachers monitor and assess the desired characteristics ,and others.

3) The registration work. Registrar needs to records students history and define all subjects in school to teachers and enrollment data. When the teachers record data program process data and produce information for monitoring, supervision, and evaluation of learning such as the report of all grade and all activity evaluation of each student in curriculum (PP.1), Diploma of student graduates (PP. 2), the student graduates list of each level of education (PP.3), Certificate of education in various fields (PP.7), reports of the student cumulative records (PP.8), and others.

Discussion.

1. Problem results of the data and information system in schools found that hardware was moderate, software was high, and the people ware was moderate. But some problems were high. There were the speed of the internet was slow, and schools lacked of projector for teaching. All problems of software were high. They showed that a lot of school lacked of software to help working. And overall problems of the people ware were moderate but many problems. There were No computer engineers in school, many persons lacked of knowledge and ability to use the computer, and No training computer to personnel in schools. Consistent with the findings of a research of Nipon Taswong (2541) and Ploenpit Yadpaka (2549) found that the problem of hardware and computer networks were No links computer networks, No information centers (Data Center) in schools. Computer Equipment was outdated and inadequate, software problems mainly caused by the lack of a programs or software that responded to the needs. And the people ware, or personnel computers caused by the lack of competent personnel programs, lack of cooperation in working together, lack of coordination between the users and developers. There was no accurate data collection and not to be currently.

The requirements results of the data and information technology system had shown that there were requirements of the hardware, software, and people ware. Because the computer system can work, it need all of the hardware, software, and people ware. In particular, the software allowed the teachers to use program in performance measurement and evaluation work, academic work, and the registrar work. So the database design and develop programs to meet the needs of users in this study were divided into three sub-programs. The measurement and evaluation program, academic program, and the registration program. Each program were used by the normal practice of teachers, head of academic affair, and the registrar respectively, as well as design and develop the system to produce information for monitoring supervision, monitoring and evaluation of learning. Then it was able to present data and information system over a network or on the website of the schools. Consistent with the components to manage the information system (The Ministry of Education, B.E.2549), There were 5 components: Input, Process, Output, Feedback, and Environment.

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2. Study of knowledge about the development of data and information systems found the principles were 1) schools should have Data and Information Center at least one computer serves as a center for collection data and information to storage in the form of computer files grouping data by separate in each folder named according their works or named as department in school. 2) install database of school   to collect data in the form of tables such as student data table, teacher and staff information table, scores and student achievement data table, etc. 3) co-operation of each person in school to manage the data and information such as registrar must entry student data in currently, academic affair personnel must define subjects or courses to teacher and enrollment, and the teachers must entry students achievement into the system then school will have the complete data and information for monitoring, supervision, and evaluation in learning. The data management program was useful (The Ministry of Education, B.E.2549) in reducing the same data, keeping data correction, the data was freedom, data was safe, and the users could share data together.

3. Development the data and information technology system. The results showed that the program of the measurement and evaluation worked as the needs of the core basic curriculum B.E. 2551, assessing the need for the curriculum of the Ministry of Education. The evaluation of the program was in high level. The purpose of the development of academic programs to help users to work as generally. The academic affairs program was designed to assign the subjects or courses to the teachers and student enrollment. So that teachers could record data from the measurement and evaluation of student learning through the program. Then the academic affair program could produce the information of student achievement. In addition to this evaluation, it found that the registration system worked exactly on-demand. Because the ministry of basic education has set the reports format of documentations in education. They were the same standard throughout the country. So the researchers could develop applications directly and responsive to the needs of the application. The results of each program working consistent with the principles of management information system (The Ministry of Education, B.E.2544 : 8). The information system separate into 5 system, there were the basic information system, management information system, learner's information system, academic information system, and information for reporting.

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Research and development important goal is to develop innovation or educational produce, has field testing in many times until it is efficient then distribution to other schools (Borg, W.R.,1987). The researcher has developed a database and computer programs to solve the storage the data and information for monitoring supervision, monitoring and evaluation of learning in basic schools. The research's strategy used to achieve the above data and information by developing the programs to assist in the normal practice working, cause the log data into a central database of schools. After that, the researcher has developed an information system to produce information and reports to monitor supervision, monitoring and evaluation of learning. And the success of research and development is that systems are developed to widespread use. Unlike the basic research , the focus only on the new knowledge.

The model of the research in development of data and information technology system for monitoring, supervision, and evaluation of learning in basic education level. Researcher used research and development model which has the additional operation from the computer software development in general. There are the Field Testing at least 3 times consisted of the Preliminary Field Testing, Main Field Testing, and the Operational Field Testing to ensure that the system developed could be used efficiently and effectively usable. There was a step to distribute system to the other schools. Unlike computer software development in general. Majority the software was developed in a office and lacked of the field testing in other offices and lacked of distribution. The information system development needs to create database to storage data and information but the computer programming does not need database.

4. Study of using the data and information system.

The efficacy of the system. The researchers examined the system working in each sub-program. The measurement and evaluation program, academic program, and the registration program, all programs workings were accurate, fast, convenient, easy to use, operation as manual. Consistent with the efficiency of a computer program in the research of Patcharin Sae Hair (2544)), which has developed a computer program for meta-analysis based on the concept of the glass. Which has evaluated the effectiveness of the program by considering the accuracy. reliability, the speed of using program, in modern using, easy to access, and the results were as user's needs.

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The effectiveness of data and information technology system. Researcher checked from the programs developed to work as intended by the user and used acceptance questionnaire to evaluate the program in the Preliminary Field Testing. In Main Field Testing and operational Field Testing used Evaluation form to evaluate the programs. The results showed that: Performance of the measurement and evaluation program, academic program, and the registration program worked exactly as intended by the user requirements.

Using of the data and information technology in basic schools for monitoring, supervision, and evaluation. The study found that users must be recorded data then the system could produce the desired information. The researchers have identified programs based on the work, they were 1) Program used for the measurement and evaluation work. Teachers need to save the student assessment data and the results of various evaluation in student development records (PP.5) and teachers could be used to check the score, track students, supervision or advice on learning to students individually. 2) Academic programs, academic affair personnel used for records the assignment of course or subjects to teachers and enrollment. After the teacher had recorded data and information on the study or evaluation. Then Academic Affairs could report student achievement and classroom courses individually for use in monitoring and used to assess the achievement of all subjects for improving of learning and teaching. 3) Registration program. Registrar of the school must be recorded on the student history and all the courses offered in the school. When teacher records their data then registrar could produce various documents from the record collection of the student achievement (PP.1) could be used to track student learning outcome, classified group learning. The graduate report (PP.3) could be used to monitor the success of each academic year of the school. The registrar can also use this system to monitor the learning level verification and update information as accurate and currently.

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Suggestion.

Suggestion classified into two categories as follows.

1. The suggestion to apply the data and information technology system.

1.1 The data and information technology system for the inspection supervision, monitoring and evaluation of learning in basic education that researcher developed can use in all the basic educational school. The school administrators, teachers and educational personnel should work together to cooperate in the use of the system, to provide data and information for monitoring, supervision, monitoring and evaluation of learning in schools. Each work should be responsible for the recording and production of the following information as needed.

1) Teachers using for measurement and evaluation in the course scoring record and evaluate the desired characteristics, reading thinking and writing assessment, and print the results of the development of the course. (PP.5).

2) Class teachers report on the development of the students individually.

3) Academic affairs use academic program in determining the course teachers or using the timetable to enroll. So that teachers can access the measurement and evaluation program to assess students individually. Then academic affair can report student achievements from the system. The courses, and reports of student achievement contained in the inspection supervision, monitoring and evaluation of education and learning. This should serve for certification, assessment results, desired characteristics (PP. 4), cumulative student record book (PP. 8), and book of learning outcomes (PP. 9) individually to students as the requirements.

4) The registration program used to add a new student data and information , updating the current of students classroom, print a list of students in each classroom and printed documents, including the accumulated grades of students in each curriculum level (PP.1), certificate of graduation (PP.2), reporting graduates in each level of education (PP.3), and printing the certificate of students in Education (PP.7).

5) Educational administrators should be used to check every program are current use for supervision, monitoring and evaluation of learning in schools and using the information from the system in the management of efficiency and effectiveness.

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1.2 The data and information technology system programs. The researcher developed available in two versions. The first one is stand alone programs, this version running on a single computer, using Microsoft Access database suitable for small and medium-sized school (number of students less than 500 persons) because of the easy installation. Program and database are in the same Folder of the computer. And the other one is the programs for computer networking, using Microsoft SQL Server database, suitable for medium schools or the large schools (number of students more than 500 persons), this version schools should prepare the computer networking. And assigned one computer to be a server computer, to install Microsoft Windows Server, and Microsoft SQL Server database and configure the IP Address fixed one of the LAN computer. But the client computers are not required to have a static IP then to install the application programs on your client a computer. While the client's computers are running, they will sent data and information to store on a central computer server or Data Center of the schools.

1.3 The backup of database, retention, and moving forward class at the end of the academic year. How to copy the database based on the version of programs and databases used.

Case using a stand alone programs and the Access database, the copy a folder from original folder and paste or to store in the separated folder. Folder names may use the suffix numbered year to determine whether any of the data of the academic year to get the documents and evidence that school year, and the current folder from the program of registrar moving forward class at the end of the academic year.

And case using the computer network programs and the SQL Server database. Using SQL Enterprise Manager program to backup and restore database in another name may be numbered year at the end of database. And the client computer copy program in current folder to store or paste separated from another folder. And delete Myconnection.cnn file when first running the program, program will let the user to entry the database name, IP of database Server, and password to entry the database. So both systems the folders are used to separate the database of each academic year.

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2. The suggestion for the next research.

2.1 The data and information technology system for monitoring, supervision, and evaluation of learning in basic education that researcher developed for schools, the classes from grade primary P.1 to high school M.6, the main objective is to work with ordinary work by using application program then getting the data and information from the programs. Therefore, the program should be developed further to find a summary overview of all the schools in educational area, provincial level or the national level. This may be done by making the website so that each school can sent database to present data and information and summary evaluation of learning in schools.

2.2 Schools can develop the other program and update database to the other research to store data and other information produced outside of this research. However, the researcher does not locked or hidden database. If an Access database can be added to the table or create a query or a report to various reports from the program. Similarly, the study used a SQL Server database, it can do the same. Using SQL Enterprise Manager Database management to retrieve any data. And more as needed do not delete the table data or existing data in this database because it will have some errors. But the more tables and files they do not affect the functionality of the original application.

2.3 Computer language that researcher use in this research is written in Visual Basic 6 on the Windows operating system and database using Access or SQL Server, so if users want to use it on the other operating system such as UNIX Linux or SUN. It is necessary to develop new programs and use of a database to meet the current operating system which focused on programming and design. Also, some of users might want to use the program through the Internet, they can develop new programs on the Internet, using such as language, PHP, HTML, Microsoft dot net framework etc.

2.4 There should be have the research and development of data and information system for other requirements such as information systems for quality assurance. The internal quality assurance and external quality assurance to use the data and information in the development of education in each school year. And should be prepared to present data and information assurance education to disseminate and promote the quality of education among teachers, staff, parents and community stakeholders have recognized to improve and promote education. Also, research and

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development of data and information of various educational institutions across the country to collect data and produce information needed for the planning and development of education and production of information for schools, educational office area, and a summary of the overall education of the country.

2.5 Educational research aimed at developing innovative product or technology should be used in education research and development processes. The form of Walter R. Borg (1965), which has 10 steps used in this research. The result of the research process to trial in the real field (Field Testing) to 3 rounds and each round has increased the size of the user group. The system developed reliable. Since it has been updated and improved continuously. The system user acceptance. And assessment system has efficient and effective and work to meet the needs of users in actually works. Also in the research process has step in the dissemination and extension. The system developed has been used extensively. But some educational researches developed system and trailed on one department . So it did not trail in other department and lacked of dissemination and extension. It made the investment in research was not worth as much as it should.