Building Concept of High School Information Technology Based

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Abstract. The purpose of this research is to apply or deliver the study to the schools that have not used the concepts of information technology-based education system in order to become an information technology-based school to create and promote every school in Indonesia. The method used in this research was descriptive method and action method (action). Descriptive method used to test the existing problems by collecting related data, and describe the analysis or reveal the analysis that has been done, while the action method to follow up from the results of the descriptive analysis then implemented the theory in a good system design. The result of this research is that the school with the media-based information technology results Effectiveness, Productivity, Efficiency, increasing the education Quality that is efficient and able to teach the learners in a sustainable manner and resulting high performance in learners academic achievement.

1. Introduction

Information technology can be an important tool for education in schools where users can process and access the required data quickly and accurately. At this time the school development tried to apply the elements of information technology in the implementation of education, both in terms of learning and in terms of education management such as enrollment of new students in the school. However, there are still many schools that have not implemented Information Technology to help the education management in the school. This is an absolute necessity for schools that want to develop and want to be oriented towards education services for both parents and learners.

According to Leidner and Jarvenpaa, User has to understand the pedagogical assumptions underlying the design of information technology for educational purposes to improve learning processes. Their research focused on initial attempts to bring information technology to management education follow a classic story of automating rather than transforming and explain some sets of technologies in which management schools should invest in order to inform up and down and ultimately transform the educational environment and processes [1].

Next research indicates that computer technology can help support learning, and that it is especially useful in developing the higher-order skills of critical thinking, analysis, and scientific inquiry. The presence of computer in the classroom does not ensure the effectiveness of learning. But there are some ways to improve the process of learning such as (1) active engagement, (2) participation in groups, (3) frequent interaction and feedback, and (4) connections to real-world contexts. Not only in the
technology, another thing to be considered are teacher training, curriculum, student assessment, and a school's capacity for change [2].

IT-based school management can start from the first time students enroll school attendants, online attendance, run teaching and learning activities, until they pass the data will be in the school management system based on information technology, not just change the process of various modules that exist within information systems in schools, but also in order to improve the management system policies within the school and generally used frequency of Internet use for communication. [3] Beside of that, the used of culture-specific leadership style in the research raise the standards at an information technology high school combining of the elements of traditional notions of leadership with the non-traditional notions of an ethno humanist role to create a style that complemented the changing climate in a newly restructured urban school.[4] then the competence of the teachers decides the knowledge of the students, having insights into students' special needs and progress; choices of curricular activities and materials; rules that govern children's participation; expectations from parents and communities; and the norms and rules that govern them as teachers.[5] Finally most policy makers, corporate executives, practitioners, and parents assume that wiring schools, buying hardware and software, and distributing the equipment throughout will lead to abundant classroom use by teachers and students and improved teaching and learning [6].

Educational institutions that use information technology to solve obstacles in the field of education are a college with the internet that can be accessed by students who have college. Various information constraints such as online enrollment, online lectures, online libraries, online journals, magazines, and even textbooks such as e-books can be downloaded for free from college sites available on the web. Students can look for anything related to lecture material that has been delivered by lecturers in the classroom, the goal is to compare the material, and enrich the knowledge. But the use of information technology must continue to serve information technology service (IT) that are complementary workplace reorganization, and 3) new products and services [7] Then Many different countries determined schools which adopt the policy of teaching IT as a separate subject only have to persuade and effect the change in pedagogical practice of a small minority of teachers within a school, so if the policy is to effect an integration of IT right across the school curriculum, then the majority of teachers within a school have to change their pedagogical practice to make appropriate use of IT within their lessons [8].

The Implementation of Information technology according to Dede has improved effectiveness and has the potential to help students to master complex 21st-century skills. Information technology learning help students to experience and generating knowledge, and collaborative construction of meaning is enhanced via different perspectives on shared experiences. Beside of that, simulation and visualization tools help students recognize patterns, reason qualitatively about physical processes, translate among frames of reference, and envision dynamic models. These curricular approaches improve success for all types of learners and may differentially enhance the performance of at-risk students [9].

In contrast, according to research revealed by Kong that, A literature review of the development of information technology (IT) curriculum in recent decades in Hong Kong reveals that the study become easier using technology [10]. From some of the research references that have been mentioned previously, there is still some crucial focus on the study of certain research subjects, even just explaining one part of the potential that can be used in the theme. The purpose of this research is to apply or deliver the study to the schools that have not used the concepts of information technology-based education system in order to become an information technology-based school to create and promote every school in Indonesia.

2. Method
The method used is descriptive method and action method, the descriptive method used to test the existing problem by collecting related data, and exposing the analysis or reveal the analysis that has been done, while the action method used to follow up from the results of descriptive analysis and then implemented theory in a good system design. The unit of analysis in this study is High School.
3. Results and Discussion
The results of descriptive analysis in this study are presented in IT School Based Concept (Figure 1) and IT Centered Learning (Table 1). Will be explained below:

![Figure 1. The Concept of IT-Based School](image)

In Figure 1 there is an image simulation where there are two schools that use information-based technology and which are not. It showed that schools are not based on information technology, teaching system centered from students to teachers, here the role of teachers is educational in which all the material obtained by students comes from teachers. Then at an information technology-based school, even though the teaching system is student-centered, but the student's role is interactive where students should be active in finding and obtaining materials, so that information technology-based schools can be used anywhere and anytime if required by students.
Table 1. IT Centered Learning.

| Environment          | Centred on the teacher | Centred on the students |
|----------------------|------------------------|-------------------------|
| Class activity       | Teachers are central and didactic | Students are central and interactive |
| Teacher’s role       | Deliver the material | Collaborative |
| Focus of the Study   | Remind the material | Relationship between material and meeting |
| Knowledge concept    | Accumulation of material | Material transformation |
| provision of         | Quantitatively | |
| graduation           | Based on attitude | Based on the understanding and test |
| Scoring              | Multiple choices | Portfolio, problem solving, attitude |
| The use of technology| Exercise and practice | Communication, teamwork, attitude |

In Table 1 it is obtained from the analysis, it can be seen that the difference of learning in the environment with each teacher-centered and student-centered learning system is very different where the teacher-centered is the school that does not use information technology where the teacher is as expert, when compared with school-based information technology where learning is student-centered.

Then the method of action approach (action) as the discussion in this research is used to apply the concept of high school based on information technology consists of several main components to become information technology-based schools should at least meet the elements of technology, content and curriculum, learning process, facilities and infrastructure, competence of human resources, administration system and school management, infrastructure.

The following elements to make the school based on information technology:

1. Learning Content and Curriculum
   Face-to-face learning with teachers is limited, where teachers are experts because of their limited knowledge gained, it is better if learning uses the technological elements where students are free to seek unlimited knowledge when using the elements of information technology.

2. Learning Process
   Learning system in the form of students as a central where students are required to interactive (active) to elaborate the information and materials obtained and creatively and skillfully hone the ability to collaborate in solving the problems gained. The application of this method leads to the effort of involving all students in the entire teaching and learning process. Even in certain materials, students are expected to be a teacher for his friends.

   Students not only learn from teachers and books but also learn from the internet as a medium of learning to find their own materials or information they need. In addition, students also can feel enjoying the learning process if the learning process using media-based teaching technology information so that it can improve students’ learning motivation. Because if the learning process just listen and see the explanation of the teacher will the students will feel boring.

   Learning method using this information technology media more emphasis on giving:
   a. Power Point Presentation
   b. Learning Video
   c. Multimedia Learning, which does teaching by displaying images.
   d. Giving students the right to access material via the internet
   e. Repetition of important information or keywords
   f. Demonstrate the concept of the material or perform an example simulation.

   Facilities and Infrastructures are important in the establishment of an information technology-based school, so schools must complete providing good facilities, such as classrooms, libraries, laboratories, textbooks, computer labs, projectors in each class if necessary copy machines are available in schools for the benefit of students as well as technologies such as computers and internet facilities. This facility
is useful as a means to help students improve their knowledge and insight; with their internet and other means each student can obtain the information and materials needed to add learning materials.

Human resource needs to be developed and improved. It is important build information technology-based schools. Therefore, the improvement of the quality and quantity of human resources is an obligation that must be done in a trained, planned and directed. Therefore, in building and implementing school-based information technology needs to establish quality human resources by providing education and training are qualified.

Human Resource should have the following skills:

a. Able to create instructional materials on learning method using information technology media.
b. Able and smoothly operate computer.
c. Have IT certificate and teacher certificate.
d. Acting as an expert on teaching and learning process.
e. Has conducted training in teaching students using media technology method.

School administration and management system is an information system in schools that is needed because it relates to the management of learners from the first to register until graduate from the school. Therefore the required system is needed to realize the performance of school teaching and learning. School performance can be known from the effectiveness, productivity, efficiency, quality to produce better education that is able to implement the educational system on students in a sustainable manner. If the system is successful then it will produce high achievement for school and students.

The following systems must be owned to build schools based on information technology:

a. School Information System, such as registration of new students.
b. Academic Information System, such as assessment, making of learning curriculum.
c. School Administration System, such as monthly fee payment, new student registration fee.
d. School websites that are routinely managed.

to build an information technology-based school, schools must have achievements in the academic and non-academic fields, as well as schools should have adequate infrastructure and superstructure for teaching and learning activities supported by learning technology media that can facilitate the students in understanding learning materials that have been taught by classroom teachers as well as outside the classroom. Media learning technology can be in the form of multimedia animation, PowerPoint presentation using projector, learning videos so that learners are interested and easy in understanding the material delivered.

The following systems must be owned to build schools based on information technology:

a. Hardware Specifications are up to date.
b. Software Specifications are up to date.
c. Multimedia and Design Laboratory.
d. Computer Laboratories in IT-based schools no longer serve as a computer learning tool but as a place to do research or project.
e. Adding Programmer-based student’s activities
f. Projector in each class.
g. Photocopy machines provided by the school for students.
h. Adequate internet access.
i. School website.
j. Technological teaching and learning materials.

4. Conclusion
With the existence of an information technology-based school, this will create Effectiveness, Productivity, Efficiency and Quality in the education world and produce quality education results and sustainable to produce high achievement in academic achievement of learners. The challenge in building an information technology-based school because not only in its cost is very large but also in carrying out its concept is difficult in updating, implementing, training and also learning for learners, content and curriculum, learning process, facilities and infrastructure, source capability the existing human resources
in schools, the administrative system and school management and not to miss the existing infrastructure in the school is not only that can be done in building the concept of school-based information technology and much more.

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