Improving ICT Education Quality at a Private Junior High school in Manado

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Abstract
Every second technology has improved and developed massively. Education practitioners have tried to keep up with all those improvement. One of the aspects that they are trying to keep up with is Information and Communication Technology (ICT). For students at high school, they need to get ready for using ICT practically and theoretically so that they would not be left behind with the world’s improvement. Teachers, facility, and students need to be maximized so that all the potential could be explored. The condition of the school in which this study takes place is that the school has all the computer facilities. The problem is that they have not used it in a maximum way because they do not have Internet network. To improve the quality of this school then an internet network is build involving students and teachers. Students are involved in building the internet network, they start using blog in their practicum class and an e-learning website is developed. The e-learning is run using Moodle. By having internet network is thought to be the starting point of improving students learning quality. The result shows that students could understand and practice all the theory much easier as they learn by doing what they have in theory. With the e-learning website, student and teacher could get an alternative learning system as they could access it online.

1. Introduction
Technology has developed in many aspects of human’s life. This phenomenon has made the society use the advancement of technology to help them in doing their job and also to broaden their knowledge. One of the common uses of technology that could be easily found today is in education field. Computer and education are inseparable. With computer, teaching learning process could be facilitated so that students could access it easily. Apart from that, with technology information and knowledge could be widely accessed around the world with the help of internet.

Students generally could use computer in their study such as having practice session at laboratory and supporting their study. Computers could also be used for introducing students to all available facilities offered. From the teacher’s side, computer could be used in a maximum way to support their teaching activity. In this case, teacher’s role is very important in guiding their students by providing facilities and system planning to support the use of information communication and technology in their teaching learning process.

2. Teaching Learning Process
Teaching learning process in general could be seen in Figure 1.
In general, the teaching learning process at school could be explained as follows:

- Teaching learning process takes place in a classroom with the teacher giving the material.
- Teaching learning process in a laboratory takes place with the teacher giving tutorial on how to solve a problem from a given case the students are given a case to solve.
- Teaching learning process outside classroom takes place by having lessons that need interaction and activity outside the classroom such as physical education or any form of study tour.
- Study guide is required by all 9th graders as their preparation for national examination. In line with that, extracurricular activities are required for students based on their interests.
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• Home works and assignments are given in their learning process to help students understanding the given lesson.

Those activities also take place at the school in which this study is carried out; for example the teacher will explain the material for particular lesson and students will take note. When students have something to experiment in the laboratory, they will get a tutorial and sample case from the teacher before they do the assigned work on their own. Besides, teachers give assignment or homework to students to do at home. For ICT course, there is no practice on internet because this school does not have any internet connection that students could use to support the study. Therefore, the ICT laboratory works is designed according to the condition of the school.

3. Problem Analysis

As explained previously the teaching learning process in general, this condition happens at one of Junior High School in Manado. All the teaching learning process takes place at school hour only. This school has computer laboratory, however it has not been used in a maximum way. Let’s take an example; the teachers do their teaching activity with a lecture method, whereas all those material could be found easily in the internet. All students could easily access those materials provided that there is internet access they can use. It means that they actually could do the learning process in the classroom as well as outside the classroom. The use of laboratory in this case is still limited to the available facilities at school. The main problem at this school is the fact that this school does not have any internet connection. This makes the students get the ICT lesson in theory only, they do not directly practice it at computer laboratory.

4. Improving Learning Quality

From the analysis presented previously, there are three things to improve the quality of the learning in this school. Firstly, there should be a network practice in computer laboratory. Secondly, there should be a practical implementation of internet use such as blogging. Lastly, the school should develop e-learning website using Moodle.

If the use of internet and e-learning website are kept used and developed well then teacher could implement a different method that make the teaching learning process is more active from students side. Students could actively discuss all material and find any supporting material from the internet. This could be realized if students prepare the material before hand so that teacher does not need to give lecture when they are in the classroom. The teaching learning process could take a two direction process, from the teacher to students, from students to teacher or it is also possible from students to students.

4.1 Implementing network practice in computer laboratory

Internet is a collection of various LAN and WAN of computer networks around the world. It makes a wider and more global network. Internet network usually uses TCP/IP protocols to send and receive the data. Internet comes from the word Interconnected Network that refers to all connection from various computer networks in the world integrated to make a global communication.

The network being developed is a peer to peer Local Area Network (LAN) with star topology. With star topology, a computer will be linked with a hub. The advantage of using star topology is that it can connect many computers and the access between each computer to exchange data could be done easily and fast. The use of LAN enables the user outside the area to
exchange information when they are internet connected. This fact could save time and cost in sending packet of data. LAN network could also be used for backing up data in other computers without needing to break the hard disk.

LAN network could be linked with internet network using modem that is connected to ISP. After LAN network has been successfully developed and connected to any ISP, students could use the internet connection in their ICT class for their practice about network and internet. The practice class is carried out by introducing and explaining the components or any means needed for developing a simple computer network and how to connect to Internet.

Steps for network and internet practices are as follows:
1. Students are introduced with the name and function of each equipment used.
2. Students assemble UTP cable using RJ45 connector with crimping tools.
3. Students examine or test the UTP cable assembly with a LAN test.
4. Students are introduced to TCP/IP protocols and do IP setting in each computer connected into the network.

Because the setting of modem could not be changed, students are explained how to set the modem and how to connect LAN with internet.

4.2 Using Internet through Blogging

Another ICT material that could not be performed previously is using internet through blogging. The practice is performed by explaining the definition of internet, browser, search engine, blogging, and the use of blog. The steps for classroom practice of using internet and blog are as follows:
1. Students are introduced to the work environment of using internet such as ensuring the network connectivity, and software used like browsers (Internet Explorer and Mozilla Firefox).
2. Students are taught to use browsers, type valid address in the address bar, visit search engine sites such as Google and do the search.
3. Students are introduced to blogging sites i.e. blogger.com.
4. Students are taught how to Google account before using blog.
5. Students are taught how to build a blog, write an article, upload pictures in the article and set the blog appearance.

4.3 Building an E-learning Website using Moodle

E-learning stands for Electronic learning, it is a new way in teaching learning process using electronic media especially internet as its learning system. At the moment in Indonesia, there are many institutions who have implemented e-learning. There are around 38 e-learning websites as shown in dikti.go.id. Those e-learning sites are used in higher education levels.

E-learning concept implementation is using website in which the user either the students or teachers interact to each other using learning features available in the sites. The website itself is built using Learning Management System called Moodle as the Content Management System (CMS). It has already had many learning features so that it makes the site building easier. The interface of the site is made in a simple way but it is interesting so that the user could interact comfortably. The version of Moodle used here is 2.02. It supports a more dynamic theme.

The website consists of Home Page, two main menu (Site News and Chat Room), four navigation menu (My Home, Site Menu Pages, My Profile, and Course), and setting menu.
• **Home Page** is the main page of the e-learning website. On this page user could see the whole description of the website. Users have user name and password so that they can have access to other menu available on the site.
• **Site News** is the main menu page that displays news about education, academic activity and school administration. User could choose the news topic that they like and leave a comment about that news.
• **Chat Room** is one of the facilities offered by this website. This menu helps the user to communicate to each other using chat box media.
• **My Home** is a page that gives information about profile of the user and any courses they have taken. The profile covers personal data, course taken and personal file.
• **Site Menu Pages** is the navigation to Blog and Tag. Blog is a page in which the user could write an article for publishing in the website and Tag is the search page related to all the topics offered in the site.
• **My Profile** is navigation menu that has six sub menus to see and make changes to the information on user profile. It can also access the personal file and all incoming messages. The sub menus of **My Profile** are View Profile, Forum Post, Blogs, Messages, and My Private Files. View profile is a submenu that provides information about the user’s personal data. Forum Post submenu displays information about any writing composed by the user. Blogs sub menu is like the site pages displaying any blog developed by the user. Messages are used to see incoming personal messages, sending messages, and replying the incoming messages. My Private Files enable users to see and arrange all files uploaded by the user.
• **Course** menu displays all the courses taught to all students. User (student) could choose any course they want. They also could see and download any available materials. Meanwhile user (teacher) could create and upload course material. Student could join any activity provided in the course. Apart from that, this page displays all the taught courses and their material such as downloadable text book and quizzes.
• **Setting** menu is an additional menu that could be used by the user to do the setting of each menu or pages that they access. Submenu setting could change based on the page accessed by the user.

Business processes takes place for user, student and teacher when they access this website are as follows:
1. User accesses the URL of e-learning website.
2. User could only access Site News menu to see the news and has to login to access other menus.
3. User will be navigated to Home Page when they login to this site.
5. User accesses My Home. This menu will be displayed when user successfully login to the site. This is the home page of the user account.
6. User accesses Site Pages. This page navigates user to the blog and tags pages, also to the main menu.
7. User accesses Chat Room to communicate with other user accessing that site.
8. User accesses Course Page.
9. User chooses any course that user wants.
10. User (teacher) could create the course material by typing it directly or uploading their material to that course.
11. User (student) could access any material created by the teacher. Besides, student could download any material uploaded by the teacher.

12. User (teacher) could create any course activities such as assignment, quizzes, test and essay for the students. In this case, the teacher could determine the assessment of any activity that the teacher creates.

13. User (student) could access the activity created by the teacher and do it online according to the time set by the teacher.

14. After students are finished doing an activity, they could see the score or result right away.

15. User accesses My Profile menu. User could complete their personal data, upload profile picture to display in the profile page and check the incoming message from other users.

Steps for developing this e-learning website are as follows:

1. Deciding the domain name and hosting.
2. Installing LMS Moodle 2.0.2 through cPanel server host.
3. Setting some function of the website such as user registration using email authentication, change the appearance of the websites (background, theme, toolbar, and main menu). Having done with the setting, then the main page is set and adding an admin account. Other users are also set such as course administrator, user (teacher and student), and course creator (teacher).

At implementation stage, this website could attract students’ interest to use internet as a means of learning because of its easiness and the fact that students could get a load of information and text book freely. In addition, the system could register a new user, creating course for materials by linking it to the URL for downloading e-textbook for high school students from the national education department. With the course menu, students could download any available materials and textbooks from the website.

The teacher could also create multiple choice tests that could be taken by the students. They could directly do the test and get the result right after. Teachers do not need to check students work after they finish, it is done automatically by the system. For the essay form, teachers still need to check them.

5. Conclusion

Based on the problem analysis and activity performed to improve the education quality in ICT in one of high schools in Manado, it can be summed up that providing internet network is just a start. The result shows that students could understand and practice the material given in their ICT course, specifically is material on network and internet, this is something they have not done before. Furthermore they could practice using internet and blog as the follow up of previous topic i.e. internet. With Moodle e-learning website, students and teachers could use it as an alternative of online learning.

With this supporting facilities, internet and e-learning website, it could facilitate students and teachers to know and make use the development of information and technology that they could implement in their teaching learning process by crossing time and space.

6. Reference

https://moodle.org/