

Transferring Technology in a Religious Based School

(A Case in West Bandung)

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Abstract—This study analyses deeply and systematically the ability of religious based schools (*pesantren*) to adapt the development of information technology. This study takes the case in a religious-based school, i.e. Pesantren Nurul Falah, West Bandung Regency. The study was conducted descriptively and qualitatively by using techniques of interviews, observation and document analyses. Face to face interviews using a list of questions were developed for this study. The findings of the study indicate that Islamic boarding schools can positively accept the transfer of technology, with the internet as the outmost. In practice, students of the *pesantren* could also happily use the technology, mainly for accessing information from the outside world.

Keywords: *information technology, information literacy, religious-based school, technology transfer*

I. INTRODUCTION

Human competence is an important factor in raising the standard of life of the nation. And this standard is very closely related to the significance of education. The government is consciously trying to improve the quality of education in Indonesia by issuing Law No. 20 of 2003 on National Education System Section 1 of the Act, which states that: "Education is a conscious and deliberate effort to create an atmosphere of learning and the learning process so that learners are actively able to develop their potentials to have the spiritual power of religion, self-control, personality, intelligence, character, and skills needed by them, by the community, by the state and by the nation" [1].

To realize the learning system, learners should be encouraged and directed to develop and expand the material of learning independently in order to foster internal motivation of learners to study harder, in other words, the learning process should be able to teach learners and students "learning how to learn". Instead, an educator in this case a teacher, is who must have the ability to identify, locate, evaluate, organize, create, use and communicate information to others to resolve and find solutions to a problem [2]. Here, a teacher should have the ability to use information technology. It requires training and habit to develop these skills because of the need of information usage is also the need of every layer of society, whether at home, workplace, college or schools [3].

Schools are institutions of formal education to develop human resources, so as to contribute to build up the quality of society. Therefore the role of the school is so important, that it must be balanced with the better quality of teachers that teachers can interact synergistically with the students, they can actively anticipate the development of knowledge, and they have the ability to access scientific world and conduct research and scientific cooperation.

Then, what happens if the school is a religion-based school, which is in the village? Does the transfer of technology in the development of knowledge take place? Who transfers the technology? What is the form of technology transfer? Those are among the questions to be discussed in this study.

II. THEORETICAL BASIS

A. *Pesantren*

The Government of Indonesia has two ministries handling education, i.e., the Ministry of Education and Culture (MOEC) performing Elementary Schools, Junior High Schools, Senior High Schools, Vocational Schools, and Higher Learning Institutions or Universities; and the Ministry of Religious Affairs (MORA) managing *madrasas* of Elementary Schools, Junior High Schools, Senior High Schools and Universities orienting to religious knowledge.

The third kind of education is *pesantren* (Islamic boarding schools). It is a kind of private school orienting to religious knowledge. The responses of *pesantren* owners are various to the systems of schools and *madrasas*. There are some *pesantrens* taking the schools as a system adopted. There are others adopting *madrasa*. But some others are not taking either of these systems of education. The word "*pesantren*" comes from the word "*santri*" itself, being added by prefix "*pe*" and suffix "*an*", meaning public house for the *santri* (students) [4]. In short, *pesantren* is a public house or a place for the students of religious learning [5].

At first *pesantrens* indeed are traditional educational institutions. It is mostly in *pesantrens* that Islamic teachings are taught primarily based on the classic books taught. Traditionalism of Islamic boarding schools (*pesantrens*) was increasingly apparent when contrasted with the relatively more advanced school for wearing modern ways. And schools are still visible when compared with the traditional *madrasa*, an

Islamic school model. *Pesantren* is a boarding school where Islamic religious instructions educated as a conscious and planned effort in preparing learners to know, understand, appreciate, believe in religion and practice it in life. It appeared that the times are changing. *Pesantren* which was considered to be still strong to take the traditional path was undergoing modernization, both in terms of co-curriculum, law, and the use of modern technology such as computers, radio, television, and even the Internet. Thus, changes in the *pesantren* are a systemic change. That is, change one thing it would change on other things. Williams suggested that four major systems in an organization, technical systems, social systems, administrative systems, and strategic systems will be mutually self-correcting [6]. The process of simultaneous changes did occur in traditional, Islamic schools.

Changes that occur in Islamic boarding schools are updating it to be modern. And modernity is the will to change things from stagnation towards progress that the demands of society [7]. This study found that the parents of students as customers of the *pesantren* are already demanding that schools must necessarily provide sciences required by modern individuals. Similarly, for the industrial world as it is now demanding another kind of human being must be produced by educational institutions [8]. Among the sciences demanded by society to be held by the *pesantren* are international languages like Arabic and English and practical sciences for life provision after time in boarding schools such as computer science and information technology.

Indeed, not all boarding schools are ready to immediately make corrections themselves and preparation to become modern. Because there are always obstacles to make it happen, among which is that they are located in rural areas that are far away, the neighborhood still covered agrarian culture, management schools still family-oriented, technology that has evolved slowly, and so forth. But that a school must respond to the demands of society had then proposed to perpetuate it as a center of community activities is also a reality that cannot be denied. If schools do not follow the will of the people to follow the progress, schools will be abandoned, and the story of Islamic boarding schools, then, just as the story of the past. Trend of today's society is demanding that schools not only dressed the village, but also willing to look the city.

As an educational institution that absorbs the national education system, schools also have a goal to help training the mind-set of students in order to solve the problems with the critical, logical, careful and precise manners. Basically, children begin to learn concrete things, to understand abstract concepts; children need information as intermediary or visualization. This abstract concept is achieved through different learning levels. Learning Islamic studies using abstract concepts will make it difficult for the students so that the students hard to imagine a concrete form in learning. It is widely experienced learners in the school. Therefore, it needs the capability to find information, pick and select the information so that the students are not wrong in perception.

B. Information Literacy

A seminar report of the American Library Association (ALA) in 1989 stated that in order to be able to produce the information literate society, the thing to do is to integrate the concept of information technology as a program in learning activities of the schools and colleges [9]. In order to realize the integration of information technology and learning activities there should be some efforts of the teachers and librarians. Teachers and librarians are required to be able to collaborate so as to realize the goal of information technology is a lifelong learner [10]. The teacher's role in the realization of information technology is essential because they must be able to transfer the concept of information technology to the learners. Teachers should also be prepared to teach students how to be critical individuals, i.e. individuals who are curious, creators and users of information. Therefore, teachers should be able to guide his students how to learn to find information sources and determine the validity of so much information in the process of solving the problems.

Information is one thing that cannot be separated from life because it is with the information that we can take the right decisions. Information is developed and followed by the development of computer technology and telecommunications. Information is not only in printed forms such as books, newspapers, magazines but also in electronic forms such as the internet, databases and so on. The development of information like nowadays causes an explosion of information that cannot be avoided. It is very reasonable considering the amount of information available both written, recorded and digitally at any time increases circulating among the community at large [11].

Therefore, people can potentially get caught up in the millions of information that continues to grow and become more and more complicated. To prevent this, each person must have the ability to search, use and evaluate information needed to effectively and efficiently develop into new knowledge. This capability is known as information literacy. The ability is due to the positive reception of boarding on information technology. The Southern Association of College and Schools defines information literacy as the ability to locate, evaluate, and use information to become lifelong and independent learners [12]. And it is clear that by having the information technology we have easiness of doing things related to the information activities. Here, smart is not enough. In a global competition, the main thing is the ability to learn continuously.

Learners are expected to acquire skills in using information technology, so as to develop the ability to think critically and solve the problems, and in turn increase the motivation to learn. Searching and finding information skills are supporting factors and a sort of facility to learn more effectively and efficiently. Someone who has been information literacy will be able to explore the ocean and the jungle of information that are increasingly expensive and complicated, whether printed or electronic one. Program mastery of information technology is considered to create skills-based literacy. Included in these skills is the ability to find information, select resources intelligently, assess and sort promiscuous resources, use and present the information in an ethical manner. In a learning

process, students use the principles of education and learning theory as major determinants of educational success. Learning is a process of two-way communication, teaching is done by the teacher or educator, while learning is done by learners or students.

III. METHODS OF RESEARCH

The method used in this study is a qualitative research method with descriptive approach. Qualitative research is a method of research that aims to gain an understanding of reality through the process of inductive thinking [13]. Through qualitative research the researchers can identify the subject and feel what is experienced in everyday life. The descriptive approach is a method in researching the status of human groups, an object, a condition, a system of thought, or an event in the present [14]. This method is characterized by the data obtained, first conceived, described, and then analyzed. Basically the method of qualitative research is seen as a procedure that can produce descriptive data, in the form of words written or spoken of people and observed behavior [15]. In this method, the researcher not only collects data but also interprets the data and look for things behind the data along with their supporting theories [16].

This research is a case study with a phenomenological approach. The task of the phenomenological users of qualitative methodology is to capture the process of interpretation. Phenomenology assumes that human beings are creatures or individuals who have an awareness of something, that something is meaningful. Phenomenology aims at describing human or individual understanding of something [17].

This research is located in West Bandung Regency with the reason that in this location there are many *pesantrens* which are very interesting to study, among which is Pesantren Nurul Falah of Cihampelas. The population of Cihampelas is quite dense. Trading conditions in the area is quite good; while the territory and population is quite dynamic with the informal sector of life. Thus, the area is quite busy so if *pesantrens* may develop here can be considered as an achievement.

The selection of *pesantren* is based on the fact that this *pesantren* is a type of religious school that combines the school system and the religious boarding system. Because of this inclusiveness, the *pesantren* freed their students to use communication and information technology such as computers and mobile phones to access the internet. In this case, the selection of cases studied is based on the case of information-rich cases [18].

In the data collection techniques to further facilitate the course of the research process, it requires accurate techniques in this study, some of them: observation, interviews, and documentation. Observation is defined as a systematic inspection and recording of phenomena being investigated [19]. Observation made here is a thorough look reality *pesantren's* response to an advanced technology of internet in West of Bandung, West Java. It can also be concluded that it was the observation data collection methods used to collect research data about social phenomena by observing, searching for answers, and looking for evidence of the phenomena that

take place in the research through the researcher's five senses. Observation in the collection of data necessary for the purposes of this study is seen or taken directly from *pesantren* students in West Bandung. The interview is a technique of data collection done through conversation directly by interviewing representative people in accordance with their knowledge and experience. Interviews conducted in this study were done to the students and administrators of *pesantren*, the authorities and the public figures in West Bandung, especially in the district of Cihampelas. Documentary Study is a technique of collecting data related to the problems being studied, namely by reviewing the documents relating to the management of *pesantrens*, especially the aspects of the reception of the information technology development.

The data analysis used here is a descriptive data analysis, namely in the form of data reduction, data display and conclusion or data verification. Based on the principle of qualitative research, data analysis carried out in the field and even in conjunction with the data collection process. Data reduction and data presentation are two components in the data analysis [20]. Inferences are made if data collection is considered complete and adequate. If there is a conclusion that is considered inadequate, necessary verification activity would be done with more focused goals. Those three activities were interacted each other to obtain a strong conclusion. Those things are done in a cycle. So if there is a shortage, the researchers could return to the field to cover the shortage. This data analysis process is called *Interactive Analysis Model*, which was developed by Miles and Huberman [21].

The framework for analyzing the findings of this study is a study by Stover which states that technology transfer in the third world occurs through the transfer of information technology carried out primarily by the school and actors in the school [22].

IV. FINDINGS AND DISCUSSION

An implementation of information literacy is not a new thing for schools. This boarding school of Nurul Falah has been implementing it to his students through programs of study are scheduled and built by the *pesantren*. Information literacy activities with the activities organized by schools nowadays certainly cannot be separated; they are complementary. If the information in the fields of religion is emphasized on students mastery of the essence of the Qur'an and the Sunnah (Tradition of the Prophet) to encourage the growth of the understanding of various aspects of life and livelihoods as taught in the Qur'an, the information literacy of the general knowledge is more emphasized on the ability of students in order to survive in facing the advances of today's information technology.

Because of the similarity of the process as well as complementary objectives, the development of information literacy in schools can actually use conditions and the situation that has been built over the years. Aspects changed only on the material that will be taught as well as the timing of activities so as not to interfere with the conditions and the situation that has been built over the years.

In more detail, there are a few reasons stated that *pesantren* is the right place to develop information technology. These

reasons include: development of *pesantren* orientation, *pesantren* teachers as models, *pesantren* as community learning center, method of learning in *pesantren*, and pupils as pioneers.

A. Development of Pesantren Orientation

In its development, the *pesantren* gradually widens its orientation as an institution which not only led to the religious aspects, but also began to explore the aspects of socio-cultural, socio-economic and information technology, so that later *santri* graduates of the schools could survive in accordance with current development. The demand is what later one of the reasons became why schools into one place right in the development of information technology, because basically their own activities and the role of schools is closely related to the nature of the information technology itself. To meet these demands, then schools should be able to understand the needs and trends of the needs of society in the context of the present and the future with many challenges that must be faced. Therefore, schools are required to continue developing the orientation to be relevant to the challenges of the times, without leaving the main orientation as Islamic educational institutions.

It is understandable, because the parents are aimed so that children can adapt to the times. A member of advisory board of Pesantren Nurul Falah says: "As the development of the times, indeed every human being's need to information technology as a requirement to be adjusted with the times. Departing from this, it is necessary if schools are not only being the second choice of parents to send their children. *Pesantren* is expected to be a complete package for all things, without forgetting the main thing, namely the strengthening of the foundations of Islam [—translated]."

As in any other educational system, the *pesantren* educates individuals who are information literate, i.e. they who have self-confidence, independence, full of initiative, and have a high motivation to perform various activities. In addition, literate individuals are individuals who know how to learn and to make lifelong learning as the core mission of providing education both Islamic education and general education. Information technology is essentially a prerequisite, core, and the base or foundation of lifelong learning. Thus, these two concepts are inseparable, one another [23]. Mentioned by a female teacher of Pesantren Nurul Falah, "We expect all students have the ability of information technology literacy and other well so that later they become a reliable source for the people when they preach later directly in the community [—translated]."

B. Pesantren Teachers as Models

The next potential for the development of information technology concepts in boarding schools is the presence of the cleric figure that became an important figure for the community. Nowadays, people still adhere to the belief that the successful education of their children is coming from their belief in the cleric who led the boarding school or the so called *ulama* (Java: *Kyai*). The figure of the clergy is a charismatic figure and a highly respected, not only by the boarding school inhabitants, but also by the Moslem community at large.

Most people still have admiration for religious scholars, for religious knowledge and practices is not shared by everyone. In fact, people still put the cleric as a spiritual leader as well as an informal leader who is close to the community. Public confidence is so high that it causes the cleric occupies an important position in the social structure, highly respected by society often exceeding respect to other important people. Pesantren Nurul Falah has also experienced similar things, as a cleric, AB says: "Public confidence is so high, making us as the family of one of the scholars here feel has a huge potential and has easy access to provide various enlightenment and understanding to the community. So it does not need to be difficult to provide positive effects, if God will [—translated]."

In the community, advices or guidance from the clergy have high allure, making it easier to mobilize the masses. It is not only among students, but from all walks of life, from childhood to senior citizens. Therefore, it is reasonable if religious boarding schools with a respected *ulama* (cleric) figure could be central to the development of society, including in the reception of information technology.

C. Pesantren as Community Learning Center

Currently, Nurul Falah boarding school is not only serves as an educational institution for the students; it is also a center of religious learning for the local community. Not a few activities that involve the public directly, like in routine assessment activities carried out, which is also open to people who want to participate in these activities. Participants for their routine consisted of mothers, fathers and adolescents. Usually, participants have a separate community, such as study groups of mothers who had a daily schedule that is different from the general study group.

In addition to the religious sciences, these teaching activities have also delivered a wide range of information relating to aspects of social life. Such conditions are highly conducive to the development of information technology, to create a society that literate to information. Thus it was confirmed by an administrator of the *pesantren*, AH: "Religious sermons usually a group of mothers has its own schedule. The topics are all kinds, not just a religious issue, but also about the problems in the family, household, even social life are also discussed. It aims to allow communities to be able to take the solution to all the problems that exist, and the decision-making should involve religious knowledge course. So that more blessing [—translated]."

D. Method of Learning in Pesantren

Learning method which is owned by *pesantrens* today regarded as an effective method, because these methods already practiced in Islamic schools for a long time and is still used until today. The method includes: *sima'an* method, which is the study of the Koran in a way to listen to someone who has memorized the Quran and then if there are any justified by the members of the present study. Other methods are *halaqoh* method, method of memorizing Al-Quran (*tahfizh*) and sermons methods (lectures). This also happens in Pesantren Nurul Falah, as a female teacher, SN, says: "The method emphasized for students is most often memorization or *tahfizh*, in which they have an obligation to deposit memorization to

the *musrif* (supervisor). In a deposit there is a target, but remain within their capability [—translated].”

Another method that is commonly used is sermons or great studies. The point is that direct assessment delivered by the cleric to the audiences. It is this kind of method that is usually followed by the mothers and the general public around *pesantren*.

E. Pupils as Pioneers

The pupils are required to have the ability to face the challenges of the times without losing its identity, so that the curriculum must be passed by them are not only related to the science of religion, but also with worldly knowledge that can be gained through formal education. With that understanding, it is properly familiarized for the students to understand and master the information technology. It is useful for the students when they go directly to the community. And this is where the potential for the development of the concept of information technology can thrive.

Needs and information searching is a concept that cannot be separated significantly in information technology [24]. Someone will do an activity to meet the need for the information he wants, the activity is commonly referred to as information searching. Chen et al. state that the search for information is the person's activities carried out to obtain the information he/she needs [25]. Humans will show information searching behavior to meet their needs. In meeting the needs of the information, someone will try to fulfil the needs by accessing the information sources available.

Diverse resources require each individual to be able to choose the right resources in order to meet their needs of information. As said by some informants that the resource that currently used by them is the Internet. HS, a male student, said: “For me, seeking for information was mostly through the Internet. Because once search, all I need is there, complete. So there is no need to bother to look for one-on-one (in any other information sources) [—translated].” Meanwhile, FM, a female student, prefers the internet, “Because it is more up to date. Especially in the *pesantren* indeed there should be no television. So yes the only one of the easiest yes Internet [—translated].” Meanwhile, FU, a male student, said that the search for that information, “depending on the needs but [the Internet is really the fastest one [—translated].”

Unlike the three other informants, HM, a religious teacher, had a fairly complete answer: “Actually, there are many ways to search information related to the fulfilment of the information herein. The facilities and infrastructure owned, yes, only like this. Internet is already provided, there is here. And it is easy to reach by them, yes internet. Despite the fact that many other means, for example, newspapers, books in the library are also present, although there are not too many. Indeed, students are not allowed to carry the gadget. So inevitably yeah... provided by the computer alone [—translated].”

When the researcher asked whether all the search information searched only accessible through the Internet, they said not all. They also adjust to the needs of the information

they need. AN, a female student, stated that the source of the information was "not only on the Internet," because "if it relates to the lessons in school use textbooks, we have ourselves." General information was sometimes obtained from other than the Internet, for example from a newspaper. Thus was said by AF, a male student. And indeed, as it was recognized by SH, a student, internet is just for helps, if the necessary material not in the book.

In doing information searches via internet, usually they are aided by such Search Engines as a tool for information search. Search engines are search tools commonly used to perform a search on the internet. Of all the informants revealed that they were more likely to use two search engines are Google and Yahoo, since both are more convenient, practical, and indeed among the firsts well-known. There were also students who said the names of the third, namely Mozilla.

According to the ALA (American Library Association), knowledge of the search engines will greatly assist in developing strategies to effectively search information. The reason they use the tools of information retrieval for reasons already accustomed to using search engines are known for. A person can be said to be information literate if he can use a search engine with consideration of the understanding and the knowledge they have about the search engine [9].

In addition to the Internet, students and academicians Pesantren Nurul Falah expected to utilize the resources of other information. A library, for example, which is one means resources can be used in the process of information retrieval. Hope was expressed by an informant: “Tracking information should not only use the internet, but there are many other means, for example, the library. Libraries can be used in fact; in addition to existing supporting books are also available newspapers and books. Though not sufficient but might be used [—translated].”

Using the library as one search access to information cannot yet be used optimally. Given the infrastructure of the library in Pesantren Nurul Falah was still relatively very low. Although there were supporting books such as textbooks, books and other reading materials, but the number is still relatively very little. It is not exactly proportional to the number of existing students. Thus, the board stated that it was very necessary repairing and revamping the library, so that later can be the primary means to search the information of the students and the academic community in Pesantren Nurul Falah.

From the various descriptions above research, it is known that the use of information technology such as the internet has been adopted by schools, although not well supported by the ability and understanding of the informants. Alan Bundy states that a person can be said to be information literate when he/she uses tools of information retrieval in different types and different shapes [26]. In conducting a search of information on the internet, the ability of the students still need to be improved.

V. CONCLUSION

Most of the students already understand the concept of information technology in general. The students are aware of the importance of information technology capabilities for them. The need of information of each student is vary. It can be seen from the information they access. For example, students who have a hobby of writing a novel would seek information on materials related to the sustainability of novel research, other students who have a hobby in the field of sports, will be more likely to seek information about the club and the sports field preferred. In search of information, students have two ways to identify their information needs, including: a) Make a plan or elaboration on the information needs; and b) inquire directly to they who know more.

Although it has a different way of identifying information needs, as a whole, however, they can easily find out the needs of the information they need. In the process of information retrieval, most of the students using the internet and using search engines. They also use reference books, if looking for the information relating to the subjects at school. Most students used Google, Yahoo and Mozilla as search engines, for they were easier and already well known. The use of the library as a place to access to information is still not be used properly, because the existing facilities and infrastructure remains inadequate. Students' capability to evaluate the information was still relatively low. It can be seen from the lack of knowledge of students about how to evaluate the information that should be done. Also, the students still tend to use the information first obtained, without checking the source, validity of the data and also who the author was. For the students, information was mainly used to fulfil the tasks given by the school as their assignments. In addition, they used information to fulfil their hobbies and curiosity.

Pesantren has a great deal of potentials for the development of information technology, as the following factors: the development of *pesantren* orientation; clerical figures that became important figures for the community; boarding schools as centers of Islamic learning for the community; the method of learning owned traditionally by the *pesantren*; and pupils as pioneers that has great potentials for spreading the information technology to the public.

What can be drawn from this research is that the development of information technology is inevitable, even for rural areas. It was proven that although schools and teachers did not encourage the use of the internet, students were able to adapt to it first, so that it could help their learning.

ACKNOWLEDGMENT

The authors express appreciation for the helps of the teachers and students of Pesantren Nurul Falah of West Bandung and those in charge in the Pesantren during this research taken.

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