

Developing Student Information and Communication Technology (ICT) Literacy Through Teacher and Library Collaboration

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Abstract: This study aims to determine the development of Information and Communication Technology (ICT) literacy carried out by teachers, libraries, or collaboratively between the two. The research uses a qualitative approach with the type of case study. Data was collected by direct observation, interviews, and documentation techniques. The results showed that students' ICT literacy was developed using the Inquiry-Based Learning and Evidence-Based Practice model approaches in learning; the library provides printed and digital information resources, helps students access information, and implements library programs. Collaboration between teachers and libraries to develop students' ICT literacy is through the guardianship program.

Keywords: Collaboration, Information and Communication Technology (ICT), literacy.

Introduction

The current of globalization that is getting bigger and bigger hits all countries in the world in influencing world development. The more advanced development of adulthood. This is a form of the rapid development of science and technology. In line with that, the development of science and technology have a major impact on the proliferation of information in the world. In the modern era of the 21st century, science and technology (IPTEK) is growing rapidly. Advances in science and technology can be used to find various learning resources, to conduct evaluations, and for other purposes.

Although advances in science and technology provide great benefits for human life, there are not a few negative impacts such as various online fraud crimes, misleading information (hoaxes), etc. Therefore, for to overcome these negative impacts, everyone must have good ICT literacy skills. This ability can be developed through learning in schools.

Considering the progress of ICT is unavoidable, then ICT literacy efforts in education must indeed be encouraged from an early age. With so many sources of digital information, it is not uncommon for students to experience confusion in referring and understanding and choosing which one information that best suits student needs, the most accurate source and can be trusted and free from fake news or hoaxes. The existence of confusion in students in trusting information can lead to students' errors in understanding information. In this case, it is also necessary to have a skill in analyzing digital information as well as possible, students need to have ICT literacy skills.

Various educational programs from the central government, ministries, and internal institutions must be integrated with ICT. With various ICT-based programs or policies, every educational person at least cares, understands, and masters it. The following are some programs or policies in the world of education and learning that are integrated with Information and Communication Technology

(ICT). One of the government programs in improving the quality of education in Indonesia is to promote literacy programs. Based on its definition, literacy ability is also referred to as ability reading and writing which are important skills in the process student development. UNESCO states that literacy is an integrated form of listening, speaking, writing, reading and critical thinking (UNESCO, 2004). In its development, literacy has expanded its meaning and reaches out to people various aspects. As stated above, literacy is not limited only in reading and writing activities, but also extends to other fields such as ICT literacy, financial literacy, numerical literacy, and others.

ICT literacy is defined as the ability to use and utilize new media such as the internet to access, disseminate, and communicate information effectively. ICT Literacy also interpreted as media literacy that positions humans who have the ability to understand, master, and utilize mass media content (Syarifuddin, 2014). According to Educational Testing Service as cited by Helaluddin, ICT literacy as is an activity in use digital technology, communication equipment, and/or networks to access, organize, integrate, evaluate, and create information for the benefit of a social group (Helaluddin, 2019).

Through the ICT literacy program, it is hoped that students have some ICT skills. This skill is crucial in finding and determining information from unlimited sources, communicating via computers and manipulate certain information for specific purposes such as completing tasks, presentation, and data analysis. In addition, literacy skills are also a demand for 21st century learning, where learning must include critical thinking and problem solving, creativity, communication skills and the ability to work collaboratively.

There are several stages in integrating ICT into the process education, namely emerging, applying, infusing, and transforming (Fitriyadi, 2013). Emerging is a stage of ICT in education where institutions, both schools, and institutions are still in the process of introducing computers in environment, maybe the school only has one or two computer. Next, the stages of applying or applying ICT in education can be done by adding

several computer units at the school. This is done by adding several computers to the school. At this stage, learning in the classroom is still dominated by the role of the teacher while the computers as one of the ICT products are used for administrative matters and matters related to professionalism. At this stage too, the teacher or educators begin to gradually learn computers for later used in the learning process in the classroom.

Third, the stages of implementing ICT in education are infusing or embed. At this stage, ICT, especially computers, have been included in the school curriculum. Thus, the entire class should already be equipped with computer equipment. Not only limited to classrooms, computers must also be provided in several places such as academic rooms, laboratories, libraries, and others. At this stage too, the teacher must collaborate with other colleagues in helping students use computer equipment to achieve goals learning.

Finally, the stages of implementing ICT in the field of education is transformation. At this stage, the teacher as an educator has confidence in teaching using ICT or computers. With other words, at this last stage the learning strategy had to be changed from teacher centered learning to student centered learning. At this stage too, the teacher and students must be able to create and organize open and innovative learning.

This study aims to determine the development of Information and Communication Technology (ICT) literacy carried out by teachers, libraries, or collaboratively between the two. Many studies on the importance of ICT literacy have been carried out, but in this study, there are interesting things that need to be studied in more depth about how collaboration between teachers in learning and the school library as a center of knowledge in schools in developing students' ICT literacy skills.

Materials and Methods

This study uses a qualitative research approach, that aimed at describing and analyzing phenomena, events, social activities, attitudes, beliefs, perceptions, thoughts of people individually and in groups (Sukmadinata, 2012).

This approach used because the method of observation and data collection is carried out in natural setting, meaning without manipulating the subject under study. Through qualitative approach, the researcher tries to observe people in the environment life, interacting with research subjects, trying to understand the language and their interpretation of a particular program. Researchers are also trying to see phenomena in the research environment, and seeks to understand and provide meaning to a series of events that he saw and heard (Musfah, 2015).

The research was conducted at Al-Izhar Islamic High School by involving teachers, students, and school librarians. Data was collected by direct observation, interviews, and documentation techniques. The observation stage is carried out by making observations when learning in class takes place, and observing activities in the library; conduct interviews with teachers, librarians, and students; and doing tracking of related documents.

Data analysis was carried out by data triangulation, namely comparing the results of observations, documentation and interview results, so that conclusions are obtained for preparation of research results (Sugiyono, 2014).

Results and Discussion

An effort is needed in schools by teachers and libraries as a source of information, in order to develop ICT literacy skills in students because the need to use ICT exists at all levels of society.

ICT Literacy

The existence of information and communication technology, in this case the internet, has had a major impact on society. It is undeniable, developments that make it easier for humans to processing and exchanging information quickly has make it easier for people to carry out their daily activities. In the midst of the diversity of forms and types of information, humans are required to can not only read and write information, but also how to take advantage of technological advances and developments in facilitate activity. In this case, ICT literacy is

defined as: a person's ability to use technology and information to achieving goals.

The phenomenon of the development of ICT has indeed penetrated all over the world aspects of community life in a relatively short time. One of a model for measuring the level of ICT literacy in the general public used Personal Capability Maturity Model (P-CMM). In this case ICT literacy is categorized into five levels, namely:

1. Zero level = if an individual does not know at all and does not care about the importance of information and technology for life daily.
2. Level one = if an individual has had the experience of one twice, where information is an important component of achievement of desires and problem solving, and has involved information technology to find it.
3. Level two = if an individual has used many times technology to assist daily activities and has a pattern repetition of use.
4. Level three = if an individual already has a standard of mastery and understanding of information and technology enforced and consistently use these standards as a reference for carrying out daily activities.
5. Level four = if an individual has been able to improve significantly the performance of activities of daily living through use of information and technology.
6. Level five = if an individual has considered the information and technology as an inseparable part of daily activities and directly or indirectly have colored behavior and culture (Saleh, 2015).



Figure 1. *Digital Literacy Model.* Source: Literate School (<https://medium.com/literate-schools/redefining-literacy-in-the-21st-century-139894b14fd4>)

The learning model used by the teacher

The learning process in the classroom has a very big role in determining the success of students. In developing ICT literacy skills, teachers in the classroom also have a strong role to play. Of course, the curriculum is the main reference used by teachers in teaching. The school curriculum requires teachers to use learning models that can contribute to student growth and development, make students active, and literate to information and technology.

Regarding this curriculum, the school requires all teachers to teach with an inquiry-based learning model and evidence based practice. The use of learning models is very necessary for optimal learning objectives can be achieved, so that lessons can be delivered efficiently, effectively, and well-measured.

The Inquiry Based Learning is intended as a learning model that develops critical thinking skills and enrich ideas in learning free and open, accompanied by a process of finding answers/knowledge built by own student. While Evidence Based Practice is the implementation of learning that uses models, strategies, and methods based on educational research and experience that has proven its success, by recording data, as well as being reviewed periodically. Inquiry is a process that students take to solve problems, planning experiments, conducting experiments, collecting and analyze data, and draw conclusions. So, in this inquiry learning students are involved mentally and physically to solve problems that given by the teacher.

In this teaching and learning system, the teacher presents lesson materials not in its final form, but students who are given the opportunity to search and find it yourself by using approach techniques solution to problem. Broadly speaking, the procedure is as follows:

Stimulation: The teacher starts by asking questions or asking questions ask students to read or listen to the description that contains problem. **Problem statement:** students are given the opportunity to identify various problems, as many as possible choose the one that is considered the most interesting and flexible to solve. This selected problem must then be formulated in questions or

hypotheses (statements) as a provisional answer to the question). **Data collection:** to answer questions or prove true whether the hypothesis is not. students are given the opportunity to collect a variety of relevant information, clearly read the literature, observe object, interviewing sources, trying (trial) yourself and so on.

Data processing: all information (results of reading interviews, observations, etc.) it is processed, randomized, classified, tabulated, even if need to be calculated in a certain way and interpreted with a level of confidence certain.

Verification: based on the results of processing and interpretation or information obtained there is information (available information), questions or hypotheses are formulated first and then checked, or whether it was answered or, in other words proven or not. **Generalization:** the next stage, based on the results of the student's verification learn to draw certain generalizations/conclusions (Sekarlati, 2017).

While the evidence based practice is implementation of learning that uses models, strategies, and methods based on educational research and experience that has been proven successful, by recording data, and being reviewed regularly. This model begins with the stage of defining what will be done. This stage is a step to identify what will be done in learning. This stage is carried out according to three principle questions, namely explanations based on what-how-why. These three aspects become the basis for analyzing some of the results obtained based on facts which are phenomena that arise during learning.

The second stage is to collect the results of student work. This stage can be analogous to a mini portfolio that contains all data on student work. While the third stage is to create conditions that allow students to learn. This stage is in the form of the teacher's effort to create an academic atmosphere that allows the implementation of learning activities for students individually or in groups. The final stage of this model is to make changes in order to provide feedback. The form of change and feedback depends on the results of the analysis of what has been done by students so as to provide solutions to what is still a problem in learning activities.

The successful teaching is teaching in which students are active in it. Teachers should be aware that whatever model is used to compose teaching materials, will not work well, if students do not play a role as well as in planning and in teaching activities related to the material. The suitability of the phases of the inquiry-based learning model and evidence-based practice makes it very possible for teachers to develop students' digital literacy skills. These two learning models emphasize the creation of students' critical thinking, analysis, and problem-solving skills so that from these abilities students can be directed to master digital literacy skills.

The encouragement of libraries in developing ICT literacy

The library is a place where students can explore, hold a wider scientific exploration of various subjects independently and democratic approach to what is being studied in order to gain deeper knowledge of just what is learned in class. Libraries should play a role too as a means that can help students to broaden their horizons imagination, and improve students' ability to think clearly, creative and critical of the sources they have chosen to read, heard or seen.

The school library is a source of information in schools. Library become one of the means in supporting the learning and teaching process in school. Mentioned in the School Library Guidelines issued by IFLA, the mission of school libraries is to provide information and ideas which is the foundation for functioning well in today's society information and knowledge based. The library played an important role in providing for the needs of students in learning. Long before the school literacy program, the library of al-Izhar Islamic high school has implemented an information literacy program for students. Because the library houses all educational units at the al-Izhar Islamic college, so introduction to literacy already started that is with introduction system how to orderly visit, how to visit the library and get to know simple readings. So for junior high and high school students have started make simple research from what they find in the library.

- a. The library provides printed and digital information resources

The library seeks to create a literate school environment for Information and support technological progress, and foster students' reading interest. The provision of printed sources of information and electronics is quite adequate. This is shown by enriching the collection, because it becomes the most important thing in create a literate school environment. The library provides themes or curriculum materials taught in schools. When students looking for sources for enrichment in the material, libraries provide collections related to material. In principle, for things or sources of information related to the library, the library will always prepare. Besides in the form of print or books, libraries also provide sources of information electronic form of films and CDs. In addition, there are also magazines, encyclopedias, and magazines various other types.

With the adequate collection of books and digital files on library, it shows that the library has made efforts to create a literate school environment for information and technology, and cultivate a love for reading books. Students are expected can take advantage of various collection facilities that have been provided by library.

- b. Helps students access information

Helping students to get the information they need, motivate and develop interest in reading in the school community. In finding the information needed, it is not uncommon for students to experience difficulty in finding relevant sources, both print sources in this case books and electronic sources. Under such circumstances, the librarian would help students find the information they need.

When there are students who have difficulty getting needed books or ask for help finding information, the librarian does not then immediately helped, but the librarian asked the students to look first the information they need in the Online Public Access Catalog (OPAC). If the book is available in the OPAC, but not on the shelf, then the librarian helped in a friendly

and patient manner. Until the librarian continue to prioritize the principle of making students independent. Sometimes the librarian guide students to find information, teach how to shelving, and accompany students to the bookshelf and until students get a book or the sources of information they need.

To realize the role of a good librarian in helping students, first, the librarian needs to have the ability to be able to effectively teach information literacy skills, and must know the best way to make students build critical thinking skills they. So that students can become lifelong learners, can learn independently and able to develop critical thinking skills. As is known, in the regulation of the Minister of National Education concerning standards for school librarians, a librarian must have several competencies that are used to provide guidance information and communication technology literacy to its users.

c. Implements library programs

Carry out activities that can increase students' reading interest such as self-study visit program and silent reading. Library programs are aimed at to support the literacy program being promoted by the school. Librarian always do innovation and creation to make students can be literate towards digital information technology.

School librarian views on literacy skills student information, namely students can be categorized as literate, because the library at a glance already introduces the process when students write essays. The writing activity requires students to understand how to find books or other sources of information that needed, how to determine the title, sort the book, summarize the information from books to new information, write according to the character he have, use technology as well as possible and how to present it all according to the program school.

The collaboration between teachers and libraries to develop students' ICT literacy

The efforts to form a culture of student literacy that have been carried out individually without establishing relationships with each other, both by

teachers and librarians are considered ineffective. This is in accordance with a study conducted by Mokhtar and Madjid, that in order to be able to form a student literacy culture, teachers and librarians need to form effective collaborations through the integration of literacy into the curriculum (Mokhtar & Madjid, 2006).

The collaboration allows teachers and librarians to engage each other in realizing interesting learning. Teachers and librarians with their respective expertise support each other to encourage the improvement of student literacy culture (Hardiyanti, 2019). The working relationship between teachers and librarians is currently a determining factor in the success of efforts to establish student literacy. Every time literacy formation programs are implemented in schools, there will be a need to create collaboration between teachers and librarians (Pendit, 2015). In accordance with Permendiknas No. 25 of 2008 concerning Employee Standards School Libraries, school libraries need to provide literacy guidance information to its users. So in this case, to be able to make students who are information and communication literate, students must also be able to take advantage of the library well. To achieve this, the role of the teacher is not only needed but also the librarian. Teachers and librarians must be able to collaborate to be able to create a literate school community. Teachers and library media specialist must deliberately foster thinking and problem-solving abilities by creating proper classroom environments, teaching helpful techniques, modeling good thinking behaviors, and providing ample opportunities for problem solving experiences (Thompson & Henley, 2000).



Figure 2. Relationship in the guardianship program.

The guardianship program is commanded by each homeroom teacher. In the guardianship program, students are directed by the homeroom teacher to go to the library to carry out activities in the library, either reading, doing assignments, or discussing with friends. This program aims to make students love reading and improve students' literacy skills.

Thus, the advantage of collaboration between teachers and librarians is that they can directly integrate and apply literacy skills in subjects. In addition, in terms of time, the implementation of literacy skills in teaching and learning activities in the classroom also makes librarians do not need to make separate teaching programs.

Conclusions

The understanding of literacy as a dynamic social practice allows teachers and librarians to develop literacy programs that are more diverse, contextual and always seek to involve all stakeholders, both inside and outside the school. ICT literacy aims to introduce and provide skills to students in understanding and applying ICT in everyday life. The role of teachers and libraries in the development of students' ICT literacy is very influential on maximizing students' ICT literacy skills, this is especially important so that students are able and ready to face the challenges of an ever-evolving era.

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