
BRINGING DIGITAL LITERACY EDUCATION IN A NON-FORMAL CONTEXT

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Abstract

This study aims to examine the teaching of digital literacy education in three Yogyakarta elementary schools within a non-formal context. An issue on digital literacy has risen for the past few years as the use of digital media and the internet by students is becoming more frequent these days. Therefore, it is not only the ability to understand how to use both media but also the ability to develop critical thinking skills. However, there is a lack of critical thinking teaching in the context of digital literacy education in the schools. Thus, a non-formal teaching and learning process could be one of the settings that is child-friendly.

Qualitative and quantitative approaches were employed to conduct this research. Surveys were conducted for 50 students in three primary schools. The results were integrated with literature review because the integration of both approaches give better understanding about the issue.

The hypothetical findings include: (1) a non-formal context is necessary to assist both students and schools in introducing literacy through digital media and (2) there are different result on students' understanding about the use of digital media and the internet in the three schools.

Keywords: digital literacy, digital literacy education, internet use, non-formal education, children

INTRODUCTION

The efforts to promote literacy have emerged since 1950s (UNICEF, 2006). The term itself traditionally refers to the ability to read and write. Nevertheless, as the discourses on literacy have been more popular and advanced, it is not merely about reading and writing skills. Nowadays, society gets accustomed to hearing terms like digital literacy, financial literacy, and health literacy. In addition, World Economic Forum (2015) stated that there are six core skills that should be trained and mastered in the 21st century, including numeracy, reading and writing, cultural and civic literacy, financial literacy, ICT literacy, and scientific literacy. These points lead to four competencies that need to put into account, such as critical thinking, collaborative, creative, and communicative abilities. Therefore, it is clearly admitted that there are ideas beyond written language if mentioning literacy.

Among all forms of literacies, digital literacy (closely related to internet, media, and technology literacy) might be the uttermost one since its application is the most frequent with society's everyday life through technological devices which are significantly well-developed. People from all ranges of age utilize technology for diverse purposes and the advancement of the Internet complements. Hence, the information related to all included as digital media is required to make the using more beneficial. However, there comes a question whether how knowledge

about digital media can be transferred to society. If reading articles on the Internet is adequate for adults, does it go the same way with children?

Upon the notion of digital literacy

The functional understanding about digital literacy refers to the abilities to perform effective operation with software tools and/or to inquire or find information through digital devices (Buckingham, 2007). It is believed that four abilities in digital literacy are necessary such as critical thinking, effectiveness, responsibility, and understanding on diversity (Jansen and van der Merwe, 2015). In addition, Aviram and Eshet-Alkalai asserted that there are usually three kinds of skills combined in digital literacy, including technical-procedural, cognitive, and emotional-social ones (2006). In real life, these skills could be illustrated through using camera for photography or videography (technical-procedural skill), accessing a search engine like Google to retrieve information for their homework (cognitive skill), and having online peer conversation in chat messengers (social-emotional skill). Although it seems that young users are able to deploy few applications provided in their devices, their knowledge might not go beyond that. The implementation might be limited to applications and websites that are similarly accessed by their friends.

Discussion on digital literacy is related to digital space, digital ethics, and digital discourse.

The discourse aims to train the users' understanding about the digital space that offers opportunities of thorough communication through mass participation and diverse contents to invite various viewpoints (Brown, 2013). Therefore, it is clearly seen that digital literacy has positive agenda to enrich and complement non-digital media so the users, including children, could connect to digital space. However, it is important to make the concept of the literacy more powerful by integrating a critical stance. It is not only to freely join in the discourse but also to critically analyze and engage (Ortega, 2008).

Teaching digital literacy and critical thinking to primary school students

The teaching of digital literacy is substantial in today's schools as many of them have provided their institutions with computers and the Internet connection. It is also undeniable that a lot of pupils bring their mobiles to the schools. Furthermore, there are three major reasons why the teaching practice should be taken into account:

1. Digital issues are powerful in shaping the way the users (including children) think. These issues will either directly or indirectly become one of influential factors that build a certain point of view among the users (Brown, 2013). Brown also stated that having the understanding among users that digital content could powerfully trigger people's mind is necessary. We should bear in mind that online contributions include diverse topics, from those for all ages to those designed for particular targeted users. Therefore, inclusive and open dialogues are required to be more critical of what are found on the sites.
2. Children need assistance in building critical thinking skills. If adult users have had their responsibility and self-awareness of being critical about digital contents, the younger ones must be helped. Their knowledge is far more limited than the adults as the adults have started earlier to employ technologies for various uses. In the schools, teachers are the main stakeholders to support and protect children from technological use. It is due to the idea of digital literacy itself is based on each learner's objectives in using technology thus teachers' help is substantial to assess students' level of literacy (Jansen and van der Merwe, 2015). The critical thinking training incorporated in digital literacy will make students think beyond theories and will make them combine, analyze, and enlarge their thoughts about their social environment (Cope

and Kalantzis in Buckingham, 2007). Of course, it does take time.

3. Children deserve the online safety. Nowadays, digital contents are more overwhelmed by the existence of issues like hoax and hate speech. Those issues might influence children's mind if there is no guidance to understand about the problems. As automatic detectors of those are yet to be found, building the awareness among children is notable and this is all adults can do at present.

Actually, school subject about information and communication technology has been taught in some schools. However, due to the limited time during the formal teaching learning process, the concern on constructing awareness and critical thinking on digital literacy could be extended through a non-formal learning context.

The non-formal education in Yogyakarta that teaches about digital literacy has been the focus of Project Child Indonesia, a non-governmental organization (NGO) in the city, through Internet Literacy Program. The program aims to educate children about the risks and benefits of the Internet through materials delivery and projects. It is taught once a week in seven schools using monthly thematic topics designed and analyzed by the educational ground team.

Teaching and learning in a non-formal educational context

A non-formal educational context consists of several characteristics, including the changeable yet structured and planned curriculum and teaching methods, student-centered learning process, and outside classroom activities although it lacks in the time frame available (Grajcevcic and Shala, 2016). In addition, Todaro in Grajcevcic and Shala stated that non-formal education is responsive to the dynamicity of the learners' needs. Dib (1988) also asserted that two major typical qualities in non-formal education are student-based teaching and learning based on the needs assessment and direct advantage for the pupils' development. This type of education is conducted by outside school institutions, such as NGOs, civic social groups, public and/or public-private organization, and international agencies (Latchem, 2014). Kahler in Latchem added that NGOs are the ones that usually provide non-formal education working together with government and schools for community development.

Based on the explanation above, non-formal education does take into account the significance of children in the learning process by emphasizing

the student-centered approach. Besides, most of the teaching and learning activities are designed to be based on the students' needs and to not only be inside the classroom. Considering those points are essential since learning process that is connected with what they need will help shape deeper comprehension on the knowledge being delivered. Therefore, it is substantial to design activities that have correlation with the students' daily life so they can connect to the knowledge (Dewey in Kim and Dopico, 2014).

Project Child Indonesia as an NGO in Yogyakarta that initiates Internet Literacy Program has adopted a non-formal education setting for children based on two viewpoints:

1. Direct involvement
The organization aims to provide the students not only hands-on but also minds-on experiences. Minds-on experiences refer to the involvement of students' cognitive and social observation and comprehension in the discussions (Kim and Dopico, 2014). This direct and open engagement will assist the facilitators to understand children's way of thinking (DE ABREU, 2010) and will help both pupils and facilitators to undergo more relaxed atmosphere (Kim and Dopico, 2014).
2. Networking with formal educational institutions
Non-formal education (as well as the informal one) appears to complement formal schools in providing better education for children. Thus, there should be no so-called antithesis between one another as each of the education type has its own space to improve education (Dib, 1988). Project Child Indonesia makes use of this opportunity (non-formal education) to work together with schools in creating improvements on education, specifically in digital literacy.

RESEARCH METHOD

This study employed meta-analysis which is a method to synthesize multiple dissimilar yet independent studies (Cogaltay and Karadag, 2017).

The first objective of this research was examined using a qualitative approach proposed by Creswell (2005). It is considered that the first objective aims to discuss the teaching practice of digital literacy in Yogyakarta elementary schools within non-formal education. Thus, observation was conducted during the implementation of Internet Literacy Program as digital literacy education. Several characteristics of the program were found which were based on non-formal education features derived from various sources. The data were analyzed

using descriptive discussions.

The second objective was analyzed by employing a quantitative approach adapted from Creswell (2005). It aims to know the understanding of fourth-grade students on digital media and the Internet in three primary schools in Yogyakarta. The research was held in February 2018 that involved 50 subjects aged 9-11 chosen by random sampling. It was conducted by the volunteers, who used the interview guideline prior to data collection, utilizing questionnaires in one-on-one interview. Next, the data were analyzed using post-hoc test in the Analysis of Variance (ANOVA) to compare the influences among the external groups.

RESULT AND DISCUSSION

The teaching of Internet Literacy Program (ILP) as a child-friendly non-formal education

ILP of Project Child Indonesia has been running for over one year. There are seven schools collaborating with PCI to provide the program after school hours. The organization has managed the program to be child-friendly thus all of the students in the respective schools are equally treated in the teaching learning process.

The idea of initiating ILP is based on the concern on offering education about digital literacy for children, contextually the elementary school ones. It is believed that the majority of them have directly experienced using any technological devices but with diverse understanding. Therefore, this program aims to facilitate their rights to know and to learn about digital-related discussion in the classroom. However, not only are the students who would benefit from this program but also the schools in accordance with introducing digital literacy in formal educational institutions.

Then, non-formal education setting is chosen by the organization so that the teaching learning process will not distract the one intentionally designed and managed for formal education. Based on the characteristics of non-formal education discussed in the previous page, below are features in the teaching learning process of ILP Project Child Indonesia as the effort to introduce and aid the students about digital literacy in a child-friendly environment:

- a. In-class technology use

The availability of technological devices is a major and substantial factor in ILP setting. Among seven partner schools, there are three of them that have installed computers for academic activities. Therefore, the facilitators (volunteers) from Project Child Indonesia are able to maximize the devices available as one of the teaching media.



Figure 1. ILP class at SD Jetis 2 Yogyakarta

On the other hand, the facilitators require additional tools for the teaching learning process in schools that have not provided the computers yet. Hence, the students are encouraged to employ their personal computers or smartphones in the classroom under the facilitators' supervision. The teaching itself mostly utilizes appliances supplied by the schools, such as a projector, an LCD, speakers, a whiteboard, and markers. In addition, the facilitators prepare a mobile internet connection whenever they require it for the classroom activities. This implementation of technology could help enhance the teaching learning experiences as it creates a more attractive, innovative, and creative atmosphere (Grajcevcic and Shala, 2016). However, the facilitators' supervision is necessary to make it more managed.

b. Changeable and planned syllabus

To help the facilitators (volunteers) deliver the digital issues-related materials in the class, one-semester syllabus has been composed by the education team. The making process requires needs analysis which are helped by the volunteers taking in charge as they obtain direct feedback and suggestions from the pupils. Therefore at present, the team is still on progress in formulating a scientific method to assess and analyze the students' needs in order to assist the syllabus writing process.

The syllabus consists of Topic, Sub-topic, Basic competence, and Indicators. In the first semester (2017), the topics were on the Internet (general knowledge), social media, personal internet safety, messaging application, and bullying. Meanwhile, the topics in the second semester include social media impacts, privacy and security, hoax, negative and positive content, and the internet utilization.

This syllabus is planned and is subject to change if there are possible and considerable circumstances. The alteration would be applicable for the next semester depending on the result of the needs analysis.

c. Student-centered teaching learning process

One of the characteristics of non-formal education is that it makes the learners as the emphasis in the class. The role of the volunteers or tutors in the class is facilitating the learning process thus they do not dominate. The engagement is established through asking the students about their prior experiences and knowledge related to thematic questions delivered by the facilitators (Kim and Dopic, 2014).

Besides the interactive atmosphere, the activities are planned so that the students could explore their ideas and creativity through projects, for example making posters. Below are some of their work in hoax and hate speech sub-topics:

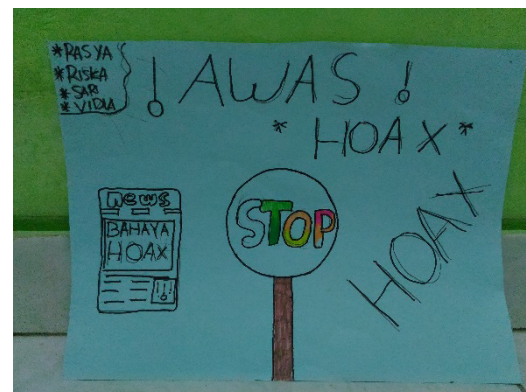


Figure 2. Students' poster on Hoax topic



Figure 3. Students' poster on Hate Speech topic

d. Knowledge beyond textbooks

There might be several elementary schools in Yogyakarta having a subject on computer knowledge. However, schools that take into account and put their concern on

digital literacy into actions and discussions might be limited. ILP as non-formal education emerges to help schools in teaching digital literacy, particularly the Internet. Since the syllabus is composed by Project Child Indonesia, the materials are more flexibly designed based on the students' needs. It turns out that they prefer having more practices than theories. Thus, it is unnecessary to use textbooks in the class.

Due to the unavailability of textbooks, the teaching learning process could focus more on the engagement between the facilitators and students and on a prompt for the students to discuss something or exchange ideas.

Besides the textbooks matter, the classroom topics are composed based on digital-related issues that could be closely related to them, such as messaging applications, hoax, and privacy and security. These are the examples of themes that they possibly directly witness. That is why the discussions could go deeper and more comprehensive for them. This practice indirectly guides them to critical thinking exercise by frequently asking using "why" and "how". A research suggested that children's experiences and knowledge when incorporated in the class is one of factors that enrich their thinking ability (binti Kamarulzaman and bin Ahmad, 2014).

Children's understanding about the use of digital media and the Internet in three Yogyakarta primary schools

To examine the understanding of children about digital media and the Internet that they employ in the daily basis, a survey was conducted in February 2018 which was the beginning of this semester's class. Students getting involved were accounted for 50 in three Yogyakarta elementary schools that collaborate with Project Child Indonesia. There are three variables including the Internet activities, social media intensities, and negative exposure. These variables are correlated with the figures that show them Internet to find out the major sources of their understanding. The discussions of the findings are as follows:

a. Internet activities

Table 1. Internet Activities

Tukey HSD

who_showed_ internet	N	Subset for alpha = 0.05
		1
Parents	25	2.56

Peers	12	3.42
Siblings	13	3.46
Sig.		.335

It is shown that half of the respondents admitted that when parents show the Internet to them, they tend to access it less frequent. In contrast, the remaining sources (peers and siblings) affect the students' engagement with the Internet in similar number of set and siblings are the most influential figures.

b. Social media intensities

Table 2. Social Media Intensities

Tukey HSD

who_showed_ internet	N	Subset for alpha = 0.05
		1
Siblings	13	2.69
Parents	25	3.16
Peers	12	3.83
Sig.		.286

Even though the least respondents admitted that it is their friends introducing them the Internet, their access to social media is found to be the most intensive. On the other hand, their activities on social media would be the least active if it is their own siblings who show the Internet. Social media in this context are those frequently deployed by them including WhatsApp, Facebook, YouTube, and Instagram.

c. Negative exposure

Table 3. Negative Exposure

Tukey HSD

who_showed_ internet	N	Subset for alpha = 0.05
		1
Siblings	13	1.85
Peers	12	2.33
Parents	25	2.72
Sig.		.586

The half of the interviewees acknowledged that the possibility of negative exposure is higher when parents are the figures showing them the Internet. It might be because parents are the least tech savvy parties compared to the other two regarding more complex and various digital contents provided. Parents' involvement seems to be less because the less availability of time and energy (Roberts and Foehr in Vittrup et al,

2016) and they usually argue children's time consumption and contents being accessed (Vittrup et al, 2016). In contrast, the negative exposure would lessen if siblings are the ones making them familiar with the Internet.

CONCLUSION AND SUGGESTION

It is concluded that ILP as a form of non-formal education could benefit both schools and students from the features that the program has. All encompassed in the program, including the syllabus, materials, teaching methods, teaching media, classroom activities, and even the facilitators' (volunteers') selection, are carefully considered. Not to mention, the collaboration with the schools assists the organization to reflect their suggestions and necessities to improve the program. Therefore, the teaching of digital literacy in this non-formal learning setting could be substantial and needed.

In addition, based on the survey conducted in three primary schools in Yogyakarta, it turns out that students' understanding about digital media and the Internet is various. However, the sources of their understanding on their Internet activities and social media intensities come from siblings and peers respectively. On the other hand, the negative exposure would be greater when parents are the ones showing them the Internet due to several factors that might include time and energy availability. This diverse understanding need to be facilitated through a medium that can help build and enhance children's knowledge and awareness about digital-related issues. ILP is one those media that provide education for children concerning on those issues.

Further studies on digital literacy teaching practice in Indonesia, particularly in non-formal and informal education are necessary to enrich updated research and help future researchers. Furthermore, organizations or institutions that are willing to establish a program should compose a scientific assessment method to examine required factors more reliably.

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