

A Study to Activate Communication by Using SNS on Mobile Phone

An Essay Lesson at the Elementary School

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Abstract. Living in the ICT society, not only adults but also children use ICT instruments. However, children usually cannot recognize what happens beyond the screen of ICT devices indeed. It is effective for such children to learn well designed concrete tasks in the classroom step by step. Using our original SNS that designed as closed system in a school, children can share information on the SNS and check classmates' screen each other without considering danger in the real world. They can know what happened beyond the instruments and many people can look the same message at the same time. It cultivates ICT literacy and critical thinking skill for children. In this paper, we will explain the result of one of our trials using our learning methods: an essay lesson with SNS.

Keywords: SNS · Smartphone · ICT literacy · Essay · Primary education · Critical thinking

1 Introduction

Mobile phone is the most popular ICT instrument now. 7.1 Billion mobile phone accounts in use worldwide [1]. People including children use this little convenient instrument whenever and wherever they want. Now we are at 100 % Mobile Subscription Penetration Rate Per Capita Globally. However, such convenient functions sometimes brings us serious troubles.

In addition to Internet crimes, Net addiction by smartphone [2] has become a big problem for young students in Japan. They cannot stop using SNS.

Because smart phone is the Ubiquitous instrument and they cannot excuse some scenes of disturbing them from smart phone use. According to research of Ministry of Internal Affairs and Communications in Japan [3], operating time of smartphone is increasing rapidly. The results of the research revealed that high school students tend to use Internet endlessly by the criterion of Young 20 [4].

The average smartphone using time for teenagers is 26.9 min per day in 2012. In 2013, it became 48.1 min per day. Especially the rate of using SNS is increasing. The tendency is expanding to younger children.

Communication without spatiotemporal restraints is also useful and convenient for primary education. However, it creates many problems. Children of the concrete operational stage (from seven to eleven years old) have difficulty to understand abstract or hypothetical concepts. They are used to recognizing new objects step by step, from closely concrete ones to invisible abstract steps. ICT communication doesn't have such steps. Though children can use mobile devices easily, they cannot understand the results and influences of their own operations.

To solve this problem, we have been working on several experiments at elementary schools [5–8].

This paper examines our learning model for primary education. After addressing the related works and our leaning model at the second chapter, we will explain our original system; PNS (Pupil Network System), and will mention one example of our methods: a lesson of essay.

2 Related Works and Our Method

2.1 Related Works About Mobile Learning

In 2009 the Ministry of Education, Culture, Sports, Science and Technology (MEXT) issued a notification forbidding school children to take mobile phones to elementary schools in Japan. Prior to the notification several studies were made and reports such as; “Development and Evaluation of a System Supporting Collaborative Learning Using Camera-Equipped Mobile Phones” (Ohkubo, 2010), and “Research on the Function of Mobile Communication System to Support Outdoor Study” (Ito K, 2005) were published. However, increasing cybercrimes, especially using mobile phones, have led to the abovementioned notification by MEXT. Most school principals are inclined to abide by such notifications from MEXT, and as a consequence active research in this field has not made substantial progress. However, there are over 1 million subscribers in Japan. It means 94.5 % of the households in Japan have mobile phones and 49.5 % of the households have smartphone according to the Internal Affairs Ministry of research (2012) [9].

The viewpoint of protecting children in cyberspace, International Telecommunication Union (ITU) published leaflets “Child Online Protection”, “Guidelines for Child Online Protection”, “Guidelines for Industry on Child online Protection” and “Guidelines for Parents, Guardians and Educators on Child Online Protection” in 2009.

Many methods and concrete examples were told in those leaflets. In 2014 the updated guidelines for Industry on Child Online Protection provide advice on how the ICT industry can help promote safety for children using the Internet or any technologies or devices that can connect to it by ITU and UNICEF [10].

On the other hand, there is a working paper written about the effectiveness of mobile phone learning in Africa. Not only the result of the experiment, but also the price and

mobility of mobile phone that are focused in the same paper. Jenny Aker and co-authors report on the results from a randomized evaluation of a mobile phone education program (Project ABC) in Niger [11].

The results suggested that simple and relatively information using mobile phones could serve as an effective and sustainable learning tool. However, the users were not children. Adult students used mobile phone at the experiment.

From the viewpoint of lesson for creating compositions, the effects of creating sentences with others were mentioned in “Knowledge building”, (Scarmalia & Bereiter) [12]. Using SNS at the lesson of essay, we have such new creative class at the elementary school.

2.2 21st Century Learning

For the purpose of cultivating Mobile literacy, we specifically try to use mobile phone at schools. In the course of these lessons, we found such mobile literacy lesson would lead children to the 21st century learning. The concept of Key Competency is introduced in the DeSeCo Project of OECD (1997-2003) and mobile learning seems to implement this concept. The international research conducted by PISA and PIAAC also mention their concept [13].

Meanwhile, USA had another project named “The Partnership for 21st Century Skills” [14].

“There is a profound gap between the knowledge and skills most students learn in school and the knowledge and skills they need in typical 21st century communities and workplaces. It is said that schools must align classroom environments with real world environments by fusing multi subjects including critical thinking and problem solving; communication, collaboration; and creativity and innovation.”

It is said that students need to think deeply about resolving issues, solving problems creatively, working in teams, communicating clearly in many media, learning ever-changing technologies, and deal with a flood of information to hold information-age jobs. The rapid changes in our world require students to be flexible, to take the initiative and lead when necessary, and to produce something new and useful. In Japan we have a research named “National Institute for Educational Policy Research” [13]. In the research the 21st Century skill was mentioned.

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We suggest one of the concrete methods to obtain this skill as following using mobile phones which is the most popular instrument at this information age.

3 Our Original System, PNS (Pupils Network System)

3.1 Our Method to Teach Mobile Literacy

In order to teach ICT literacy, we have had trial lessons with 3rd to 6th grade pupils in Tokyo. Children have opportunity to use PCs in their school. However, they tended to investigate some bookish information or simply learned how to operate PCs. We suggest that it was important for children to learn basic information flow recognizing human persons beyond the PC screen, in order to live actively in today’s ICT society where abundant information is circulated.

We will explain our method for ICT literacy at the elementary school using mobile phone. (Refer to Fig. 1).

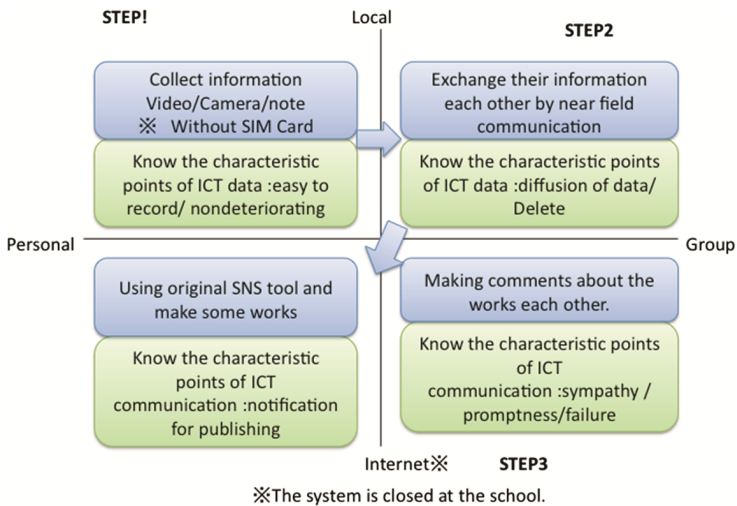


Fig. 1. Our method to teach ICT literacy step by step

The goal of this study is producing feelings of reality beyond the mobile screen and learning how to digest information to live actively in the information society.

At the first step, children use mobile phone without SIM card. They can use note, photo and video. For example they took continuous shooting photos in order to correct jumping form of vaulting horse in order to check their own forms and improve them. They checked their form as soon as they jumped and this rapidly checks were useful to improve their forms. In addition, after the lesson, pupils had to delete those photos. The mobile phones were common property at the school. So if they didn’t delete them, someone they didn’t know might have chance to look at their jumping forms: some of their forms were not so cool. Pupils learned not only one useful functions of mobile phone, but also a caution when they use the instrument. In other case, pupils brought mobile phones to the outdoor studying at the market. They made their own newspapers by taking photos. They became to know the easy usage of mobile phone and to record

information soon. In addition they learned manners to take photos of some other persons or objects. They had to ask permission before taking photos.

At the second step, they used near field communication (Bluetooth and infrared) of mobile phone. They saw with their own eyes how information spread widely and knew how difficult to delete information diffused. Teacher sent his photo to a pupil and then the pupil sent it to other classmates. He or she can send it any number of times. It took only 3 min to spread it all over the class. However, when the teacher asked the first pupil to delete the photo all over the classroom, it was troublesome. When someone refused to delete it, not only his/her data but also following data would not delete. Pupils figured out that after they spread some data, it was difficult to delete it thoroughly.

We also used near field communication for creation in several subjects. For example, taking photos of the trees in the schoolyard, they made a pictorial book. Pupils sent their photos each other by near field communication. They learned some kinds of pictures were useful to store.

At the 3rd step, children began to use the Internet. We will report about it at the 4th chapter. Using mobile phones, children created literature not only in the classroom but also outside of the classroom.

Those experiments suggested that we should care for children. As the outcome of the actual trials, we created a new application for children's communication education.

3.2 Purpose to Create Original System

Mobile phone is easy to treat for children. It is light, small and portable. In addition there are many contents; mail, photo, video, Internet applications etc. Pupils learn how to use ICT instruments and know the diffusion of their information concretely in the classroom step by step. They can look at the other mobile phone after they send a message. They feel they have to process the information carefully. However, children have many mistakes to send their messages. It is dangerous. But mistakes lead them new stages to use the ICT instrument with their thoughtful usage. So we create original system named PNS (Pupils Network System) for ethic education of mobile phone literacy.

3.3 Characteristic Points of Our Original System, PNS

It is not only closed system in the school but also several original points. On this system pupils upload information and communicate with others. The most remarkable point is that this system will provide a place for pupils to evaluate a posted article from other pupils with autonomy and check each other. When a pupil sends an article, the other one in his group checks the posted articles and sends back evaluation reports. If two or more pupils agree, the article will be uploaded on the site. Pupils from 3rd to 6th grade can vote for good articles. The pupil who gets good feedback might be satisfied and would like to be the new leader of a group. Teachers and parents can peruse these articles. Figure 2 displays a typical behavior and information flow of the submission to PSN.

Step 1: A pupil inputs an article, texts and photos, from smartphone.

Step 2: Two or three pupils should check the article before it is opened to people in a school. They evaluate that the article is appropriate to submit to PNS about the theme, and check and correct grammatical mistakes. Also, they check there are

- no prohibited words in the articles. At this step, pupils learn ethics of using mobile phone and SNS as a typical Internet services.
- Step 3: Then the article is opened to other pupils. They can add comments on that article.
 - Step 4: The teacher checks the article and he/she uploads the article to the website of the school.
 - Step 5: Parents can see the article, teachers can choose some or full steps of them. For example if it is no time to check each other, teacher can check pupils' works and upload them the site directly.

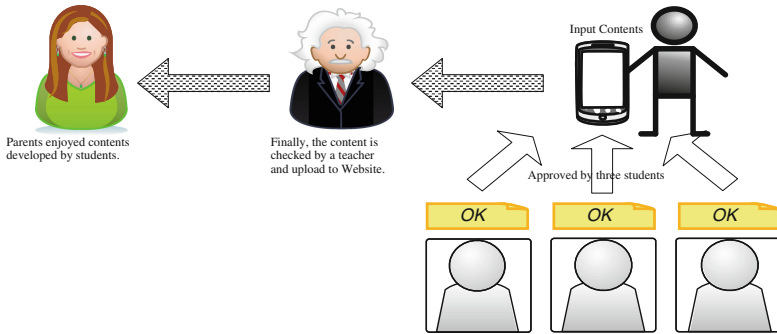


Fig. 2. Typical behavior flow of permission to PSN

Figure 3 is our SNS system. Using this system in the classroom, pupils learn the characteristic points of Internet information step by step, using Smart phone.

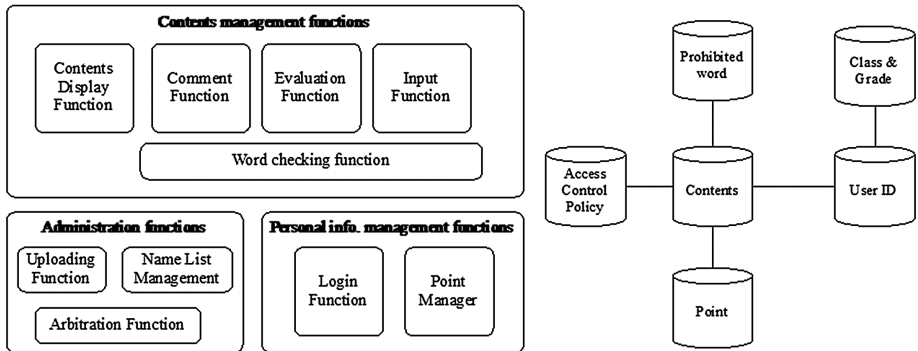


Fig. 3. Our original SNS system (PNS)

4 The Characteristic Points of Mobile Phone and Our Experiment

We will mention one of our experiments. That is an example of pluralistic works and lesson for developing a sense of exact determination of the situation by oneself. Mobile phone is used at the classroom and in the schoolyard. It connects one pupil to others in the classroom.

4.1 Purpose of the Experiment

Using mobile phones aren't written about in the guidance of MEXT in Japan, however, we used mobile phones in order to achieve the concrete aim of the subject that is aimed at by the guidance of MEXT. So there are 2 purposes to use mobile phones in our lesson.

- (A) Based on subjects of THE COURSE OF STUDY FOR LOWER SECONDARY SCHOOL by MEXT and have each purpose to learn about the subject
- (B) Educate ICT literacy and 21st Century Skills

We made a research of a Japanese lesson by mobile phone this time. The purposes are as below.

- (A) The study of Essay: Learn famous essays and try to make original ones. Then read them each other.
- (B) Using SNS: Experience to diffuse and share information by Internet. Matters to be attended to open information.

4.2 Essay Lesson Using SNS System

Pupils had Essay lesson at an elementary school in Tokyo on February 2014 after the 2nd step (Refer to Fig. 1). At this lesson, we used PSN Step1 and Step 3 and Step 4. Because teachers figured there were no time for pupils to check each other and the most important point for essay writing lesson was not such checking. Instead of Step 2 as a checking function, teachers could add comments to pupils if they found some inappropriate sentences.

Pupils at the 6th grade (n = 90) made essays using smartphone.

- (1) Taking photos

They took photos for their essays at the schoolyards with smartphone.

Most children were not good at writing essays. Because there are no special styles and it is difficult for them to become confident in their own sentences. In addition they had to think about abstract words. The theme is "Coldness". However, it became easily by taking concrete photos. Photos have some images of their feeling of "Coldness".

- (2) Making an essay with the photos using PNS

After going back to the classroom, they wrote down essays with the photos they have chosen. One sample of their essays is as follows.

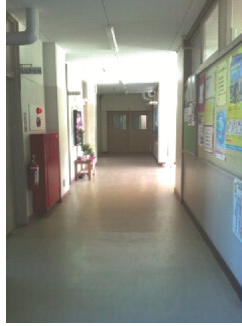


Fig. 4. A photo for pupil's essay named "Winter at the hallway".

"Winter at the hallway" (Refer to Fig. 4)

Such a hallway at school makes me cold. When we have lessons in the classroom, the hallway looks so cold in winter. After the class, that becomes a place for us. Some talk each other. I feel the passage become warmer with voices of my classmates.

(3) Reading classmates' essay and sending comments each other

All children wrote their own essays. Then children put comments to their classmates by PNS. They were encouraged by each other, using our original PNS system (Refer to Fig. 3). The system is closed in the school. Using SNS, 184 comments were written. If they didn't use SNS, the teacher would ask them some comments and then one child raised a hand and spoke a comment. If it takes 5 min for this real motion, only 9 children speak to others in one lesson (45 min). The lesson with mobile phone made children active.

This lesson showed us children have their own messages to other classmates. Most of them encouraged the essay with praise. Pupils seemed to become positive. The viewpoint of 21st Century skill, using SNS, children can make collaboration and communication actively. It is possible not to be led by teacher but by children themselves. In this lesson teacher had different standpoint from usual ones. Children used the SNS proactively and were working together to share feeling of "Coldness". Teachers checked their writing after children wrote down and communicate with each other. Children sometimes made mistakes. They had promised some prohibited matters in order to use SNS at the Internet. They had promised not to take picture of someone's face and not to write some name of classmates. They used student number in the class then. However, they sometimes wrote real names, especially to friends. Teacher noticed them and drew their attention using SNS comments. We found one characteristic point: After some child wrote down real name to others, the follower tended to use real name without awareness. When one child started to use informal words, the comments followed with informal ones. Children and teachers recognized this problem.

In addition the mobile literacy was improved. They enjoyed using the new instrument, Smartphone, and had succeeded creating essays. On the other hand they experienced some faults or some difficulties using SNS communication with smartphone.

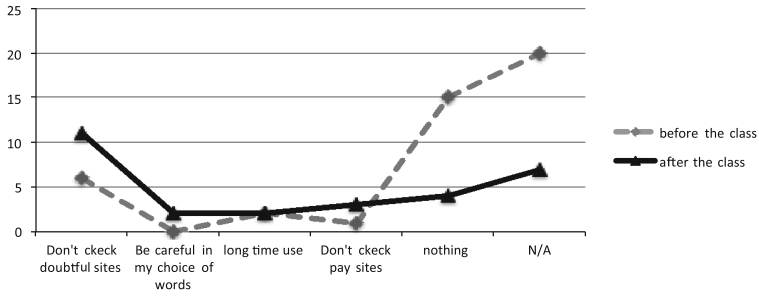


Fig. 5. “What do you have attention to use mobile phone?”

4.3 Questionnaires Before and After the Essay Lesson

We had questionnaires before and after the essay class (n = 90).

Before the essay class, 15 children answered there were no dangerous points to use mobile phones and 20 children wrote nothing to this question (Refer to Fig. 5). Answers are free writing and many children wrote their attention though those comments were not mention in Fig. 3. However, after the essay class, the answer “no dangerous points” and no answer were decreased clearly.

According to Fig. 6, children are interested in using SNS (LINE). After the essay lesson, teachers explained the dangerousness of using SNS. Pupils noticed they tended to make mistakes or some impertinent comments and listened to the lecture carefully.

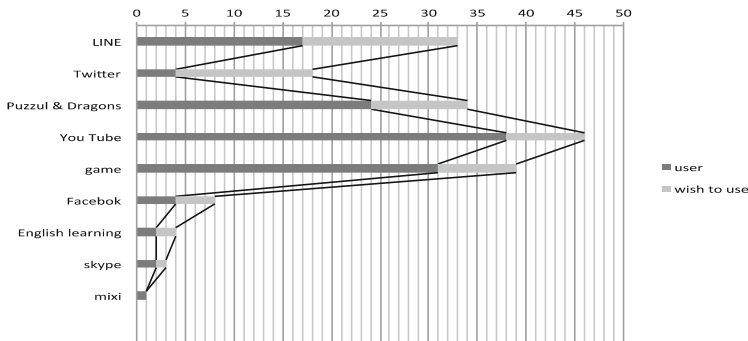


Fig. 6. Functions pupils use now and wish to use

5 Conclusion

Our SNS system, PNS is effective for following point.

(1) Essay lesson

Pupils made essays and sent comments to each other. SNS clarified what they were thinking about. They could communicate directly without talking process. It brought

them many chances to communicate in the classroom.

(2) ICT literacy and 21st Skill

Using smartphone, children had to judge by themselves. They choose words to others and were careful not to put wrong letter. If they send some wrong messages, everybody in the classroom would know it on SNS (SNS). They imagined real Internet communication and knew necessity of ICT literacy. The total skill to live in the ICT society at the 21st century, such competency will be necessary for children.

Using SNS Pupils studied in the new field. They encouraged creating essays each other. Teachers looked on them in principle instead of leading in front of the classroom.

(3) To figure out what happen beyond the screen of Mobile device.

Using smartphone in the classroom, pupils sometimes confirmed the other screen of their classmates. It is important for pupils to figure out diffusion of information. When they use PC at the PC room in the school, they always sat down. They are just looking at the screen in front of them. Mobile phone is so small that they naturally notice other users in the class. So they cannot help checking what is happening beyond their own screens.

SNS has many functions and our experiment will be continued. Especially the function of checking comments by 2 or 3 pupils will bring up the skill of critical thinking.

Schools have to align classroom environments with real world environments now. Using mobile phone: the most popular ICT instrument, in the classroom for concrete subject, pupils can feel and understand the characteristic points of ICT communication. It will bring them to have new skills of critical thinking and problem solving; communication, collaboration; and creativity and innovation.

Mobile phones are increasing in the world and are low price instruments. It will be useful for children to cultivate Competency by mobile phone. Our method will be useful for another countries.

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