Interns' perceptions of major advances in the use of information devices in elementary schools

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Abstract: Japan's on-going school computers and infrastructure projects would be wake of reformation of ITP (Initial Teacher Preparation). The researchers are now engaged on the development of one-week initial internship program for teacher-training course in elementary schools. We briefly review our curriculum development research, and report interns' perceptions of the use of information devices in elementary schools under our trial implementation of the internship.
In our questionnaire survey, students admit and approve the major changes in terms of ICT for learning happening in classrooms in a favorable attitude. However, the undergraduate students also struggle with the fact that they have to use software that they had never encountered before and did not know how to operate in their instruction activities. Making teacher-training course students proficient in the use of digital equipment is an issue that the university needs to address immediately.

Keywords: teacher education, use of ICT in classroom, misgivings for school internship program, educational reform for e-learning strategies.

Introduction

Development of active learning using digital equipment is highly anticipated in Japan. Nevertheless, the use of ICT (Information and Communication Technology) in schools in Japan has been extremely slow for a long time. Parents in Japanese schools are also more passive about ICT-implemented education than about other educational issues, e.g., parents are more concerned with English education than programming (Maruyama & Adachi, 2018). However, we may say the global school shutdown beginning in 2020 dramatically change their situations for ICT-enhanced education. Under the slogan of "Never stop learning," remote learning using the Internet has been rapidly introduced in school education in Japan. The government's previous leading educational technology research has been reviewed.

In fact, the slow progress of ICT-intensive education in Japan was partly due to the fact that the provision of information equipment had not yet reached the "one devise for one person" basis with a high-speed network. The government plans to spend around 400 billion JPY (3.7 billion USD) to supply more computers to public schools as part of an economic stimulus package for the first time in fiscal year (FY) 2019-2020 (The Japan Times, 2019). The spread of "one student, one device" information devices began at the end of 2019. Since the start date was such, unfortunately, the information devices were not installed in time for the recent school shutdowns.

Thus, until very recently, the daily use of information devices in Japanese schools has been weak, and the teaching with ICT in Initial Teacher Preparation (ITP) (OECD, 2017) has been also extremely inactive.

The purpose of the study: Seeking key issues in ITP with ICT-activated schools

As for ITP, the authors conveyed a study which is to develop a curriculum for the so-called "school internship", which is a subject in the teaching curriculum and was introduced following the revision of the Educational Personnel License Law in 2016 in Japan. Along with the revision, we have developed a concrete curriculum plan in the past two years (Minemura et al., 2020). Under the aforementioned conditions, the question of how to improve ICT teaching skills among undergraduates seeking teacher certification by providing them with opportunities for school experience activities suddenly became an important issue in ITP.

Based on the research background, this study discusses the results of a questionnaire-based survey on how first-year university students, who engaged in the school experience activities in an elementary school, think about the increasing use of ICT in elementary schools. Specifically, the first-year students were asked what they thought about a learning environment in "one student, one device" basis.

The authors arranged the questionnaire in terms of ICT usage at the school for first-year university students in the school experience activities. From their responses, we will extract initial hypotheses on what kind of instruction on ICT use should be prepared in the curriculum during initial teacher preparation (ITP) in the future.

School experience activities for early ITP students

Before describing the details of this study, we will outline the development of the curriculum for the school experience activities that the authors have been working on.

With the revision of Japan's laws and regulations in 2016, the course of school experience activities has been formalized in the core curriculum of teacher-training course. If we were to situate the course within the framework of OECD-ITP (OECD, 2017), it is to "equip prospective teachers with what they need to know and do." However, research on the curriculum of the school experience activities was yet scarce, so the authors undertook curriculum development research. The development process of the curriculum which we conducted is derived from basic investigations from several perspectives, i.e., interviews to in-service teachers and supervisors in board of education, and survey of curricula. The findings of some universities with a pioneering school experience activity initiative were surveyed from previous studies.

Based on these investigations from the perspectives of students, teachers, and universities, and from both domestic and international perspectives, we decided to develop the curriculum (Yamamoto et al., 2020). The basic elements of curriculum development are: (1) Elements related to "knowing the school and teaching profession" and "knowing the child", (2) Elements intended for "career development", and (3) factors such as "social skills, courtesy and manners". The issues related to teacher training identified in this study are considered to be part of the third stage "Equipping prospective teachers with what they need to know and do", which is a prerequisite for the fourth stage "Ensuring quality delivery of ITP programmes" in the OECD-ITP (OECD, 2017).

The authors have already conducted a curriculum validation study once, using the developed curriculum and the checklist as a trial session of school experience activities. The trial session was carried out during February and March 2020. The session is including not only actual school activities, but pre- and post- instructional courses at collage campus. The participants are four (4) students who are first-year university students on a voluntary basis. After reviewing the curriculum for reorganization, the authors revised draft school internship curriculum. Table 1 shows the fields and the items of the curriculum in the course of school experience activities.

Table 1: Fields and Items of the Draft Curriculum in the Course of School Experience Activities

Field	Item: Basic skills, attitudes, and techniques
Within Core Curriculum	Participation and understanding of training school
	Instruction and classroom management
Through Teacher-training Course	The role, the duties, and careers of teachers
Across the University Curriculum	Skills to be acquired as a college student
In Diverse Student Lives	Professionalism to the teaching profession

(Yamamoto et al., 2020)

Recent circumstances regarding informational environment in education

The Ministry of Education (MEXT-Japan) has launched "GIGA School Program" (MEXT, 2020). According to MEXT, GIGA stands for "Global and Innovation Gateway for All", and it aims for enriching ICT devices with the high-speed Internet in elementary and junior-high schools for fruitful informational environment. It invoked in the bottom of year 2019 and the program initially will finish in the end of FY2022 (March 2023). But in response to the school shutdown of nearly all schools, MEXT has decided to move up its plans and completed the program at the end of FY2020 (March 2021). MEXT envisions the realization of so-called DX (Digital Transformation) in Japanese school scene through the use of devices and high-speed Internet, as students become

accustomed to changes in the way of learning with using information devices, and as the school administration becomes more ICT-oriented.

Questionnaire Survey for Interns' perceptions
in the use of information devices in elementary schools

After the trial session which we have mentioned so far, the authors drive another trial session of school experience activities with developed draft curriculum in the school year 2021-2022. In this section, we will explain about the main purpose of the study, i.e., what the participants of the trial session as interns grasp their current circumstances in terms of ICT use in the classroom.

The second trial session is held in September 2021. The participants were four (4) first-year students in Tokyo who majors in primary education. They all applied for the trial school experience session voluntarily. The trial session was carried out at a primary school in a city in Saitama prefecture which is next to Tokyo, which agreed to accept the school experience. We explained to both the participants and the host school that the research would be conducted for research purposes, that all research would be based on the students' submissions, that the individual content of the submissions would not be published, and that only the results of the research would be published. We explained that we would conduct our research with due consideration for the confidentiality required in actual educational practice. The actual school experience activities are from September 6 to September 10, 2021.

After finishing the school experience session, a post-internship guidance was held for about three (3) hours. The guidance is held on September 17, 2021. Each student reported what activities he or she had done on each day of participation based on the contents of the journal, and at the same time, the students reflected on the activities according to the middle items of the school internship curriculum. In addition, the students were evaluated according to the rubric of the school internship curriculum: A (I could do it), B (I tried to do it, but I could not do it well enough), and C (I could not do it). The teachers also evaluated the students' performance based on the content of their presentations and the school internship diary, using the rubric A (I was able to do it), B (I tried to do it but was not able to do it), and C (I was not able to do it).

The questionnaire survey in terms of ICT use in the school is held separately via web-based questionnaire. The questionnaire survey is for grasping interns' thought by free description. The questions are: (1) What did you think about the fact that everyone has a device and can use it at any time during their time at school? (2) Of all the educational activities using ICT that you experienced during your school internship, what kind of activities using what kind of application left a deep impression on you? (3) Compared to the time you spent in elementary school, what new skills do you think elementary school students who spend time in this kind of environment will acquire? (4) Do you have any difficulties when you are working with elementary school students who are exposed to ICT devices? (5) What kind of knowledge and skills do you think teachers will be required to have in order to use ICT devices in schools? (6) From December 2019, Japan will be promoting the "GIGA School Program", an initiative to promote learning activities in elementary and junior high schools in an environment where each student is provided with an information terminal. What do you think about this government-led initiative?

Results and its empirical consideration

Interns' impressions about children's device use

The participants basically evaluated the supply of devices. Some of the participants is worried about irregular use of device and said, "I thought it would be better if we could limit the functions that can be used, because some kids were playing during class," or "It is very difficult to control every single device, so I think it is very important to make rules."

Applications of the devices that students found unique

Regarding impressive usage of the device by students, many participants mentioned about the usage as a notebook. "Arithmetic using notebooks. What I used to do with paper notebooks, I did with computers. I thought that the merits of the computer were that it could be shared with everyone, and that I could read the notes of children with bad handwriting, while the demerits were that it took more time than writing, and that it was difficult to create a layout."

"Delivery of notes and handouts" besides paper handouts is also mentioned.

Elementary school students' skill

First, the participants mentioned that the children are learning typing skills through full advantage of it. Some participants said that students did not think "internet services is relevant to their daily lives, without thinking of them as something special."

Interns' difficulties during they are working in classroom

Many participants mentioned about the rules of the usage for children in classroom. Since he or she did not know what is good and not good, he or she feel confused about children on what to do and what not to do.

About GIGA School Program

Many participants notice that some teachers at a school are complicated about the advancing technology. Some mentioned the need of the guidance for teachers in order to enrich their school practices.

Future challenges

This report is so empirical that we can not say any result at the moment. We need to collect more pointers from university students on the use of ICT, and to identify what kind of guidance is needed for university students who are going to participate in school experience activities.

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