

# What is Effective Undergraduate Lectures for ICT-use Teacher Training? - Factor Analysis on Student Teacher's Practices -

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**Abstract:** At Shinshu University Faculty of Education, student teachers are required to use ICT equipment in classes they teach during their student-teaching practicum. After the practicum, we conducted a survey among student teachers on ICT-use education. Of all about 250 student teachers, 94.9% conducted lessons using ICT equipment during their practicum. When we asked about undergraduate lectures that were helpful for conducting these classes, we found that students felt attending lectures and practice sessions run by school teachers who actively use ICT equipment and experientially learning how to connect their personal laptops to external displays as the most helpful. We also found that the leaflet summarizing real examples of ICT-use education and instruction from teachers at practicum schools served as inspiration for student teachers to use ICT equipment during their lessons. After the practicum using ICT equipment, student teachers started feeling good about ICT-use education.

## Introduction

The environment surrounding children has changed massively, and in the 21st century it is vital that children are able act by thinking for themselves, and moreover that they acquire a 'zest for life', whilst helping and cooperating with others. For this reason, it is necessary to provide them with an education that both respects the diversity of individual children and allows them to exhibit their various strengths, whilst at the same time enables children who have different backgrounds and different capabilities to generate new values through cooperation. The Second Basic Plan for the Promotion of Education (MEXT, 2013) was approved by the Japanese Cabinet, which "aims as soon as possible for all teachers to be able to teach with the use of ICT (Information and Communication Technology), and will take the necessary measures to improve teachers' use of ICT in the classroom". This means that "there will be an

emphasis on teaching with the use of ICT in the teacher training curriculums of universities, and in teacher recruitment examinations and license renewal training”, and that it has been decided that teaching with the use of ICT will be improved in university teacher training courses.

Therefore, Shinshu University Faculty of Education has ICT environment in affiliated schools (Morishita and Higashibara, 2012) and is imposing ICT-use classes at least once per month over the 3rd-year teaching training, and is making efforts to take advantage of ICT use in teaching to develop its students (Fujii and Yatsuka *et al.*, 2015). We will set the stage, incorporating lectures in the 2nd-year curriculum so that students can learn teaching methods for using ICT, with current teachers as their instructors, who instruct them in how classes should be carried out to take full advantage of ICT, such as electronic blackboards and information terminals, and so that children can best understand (Higashibara *et al.*, 2015). Just prior to teacher training in the 3rd year, student teachers will be required to bring their notebook PCs, they will learn how to output their laptop to an external monitor, and be equipped with the knowledge and skills to be able to present classes from the screen of their notebook PC. In addition, throughout their teacher training, ICT support personnel will be dispatched to training schools daily, and a system will be established that supports trainees in their use of ICT in the classroom (Fujii and Muramatsu *et al.*, 2015).

This study will analyze the results of a questionnaire on ICT-use in teaching that was conducted after teacher training. It aims to clarify whether any guidance or devices are necessary to enable practicing students to make use of ICT in their teaching.

## Research Approach and Objective

In this study, a questionnaire survey was carried out that contained the following. It targeted 253 trainee teachers who had carried out their teacher training at Shinshu University Faculty of Education in 2015.

1. Which undergraduate lectures, or content, do you think helped you to make use of ICT in your lessons?
2. Who did you consult regarding methods for using ICT in your lessons?
3. Do you think that you needed ICT support personnel to make use of ICT in your lessons?
4. Having finished teacher training, how has your impression of ICT-use in lessons changed?
5. When you have become a school teacher, do you think that you will want to use ICT in your lessons if the environment permits it?

## Results and Findings

The results of the investigation show that approximately 94.4% of the subjects conducted lessons using ICT during their teacher training (Figure 1).

When trainees were asked, using a four-stage scale for evaluation (I agree strongly - I agree - I disagree - I disagree strongly), whether or not they thought that the undergraduate lectures and content related to the use of ICT in teaching helped them to make use of ICT in the classroom during their teaching practice, it was found that the lectures “Education Content and Methodology”, in which they learned methods for using ICT in teaching from current teachers who use ICT aggressively in the school, and the lectures “Guidance Prior to Teacher Training”, in which they learned through experience methods for outputting their notebook PCs to an external display, were extremely helpful (Figure 2). In addition, the leaflet, which compiled practical examples of ICT-use, and website, which introduced lessons that use ICT that older students implemented in their teacher training (Shinshu University Faculty of Education 2014), were observed to have had a certain effect. However, for the website in particular, approximately 43.3% of the trainees answered ‘I



**Figure 1:** An ICT-use Class by Teacher Student

disagree' or 'I disagree strongly', from which it can be inferred that it has some problems.

When the trainees were asked who they consulted regarding methods for using ICT in their lessons for teacher training, approximately 60.0% of them received guidance from their supervisors at the training school, and said it was this that gave them the impetus to use ICT during their lessons (Figure 3). In addition, it was found out that approximately 20.8% of the trainees answered "I consulted nobody", and used ICT in their lessons based upon their undergraduate lectures or on their own experience. Approximately 86.9% of the trainees knew that there were ICT support personnel in the training school, but only about 4.1% of trainees consulted with them. Thus, the presence of the ICT support staff was not a determining factor in whether or not the trainees used ICT in their lessons. However, approximately 20.8% of the trainees were assisted by the ICT support staff during their lessons, and approximately

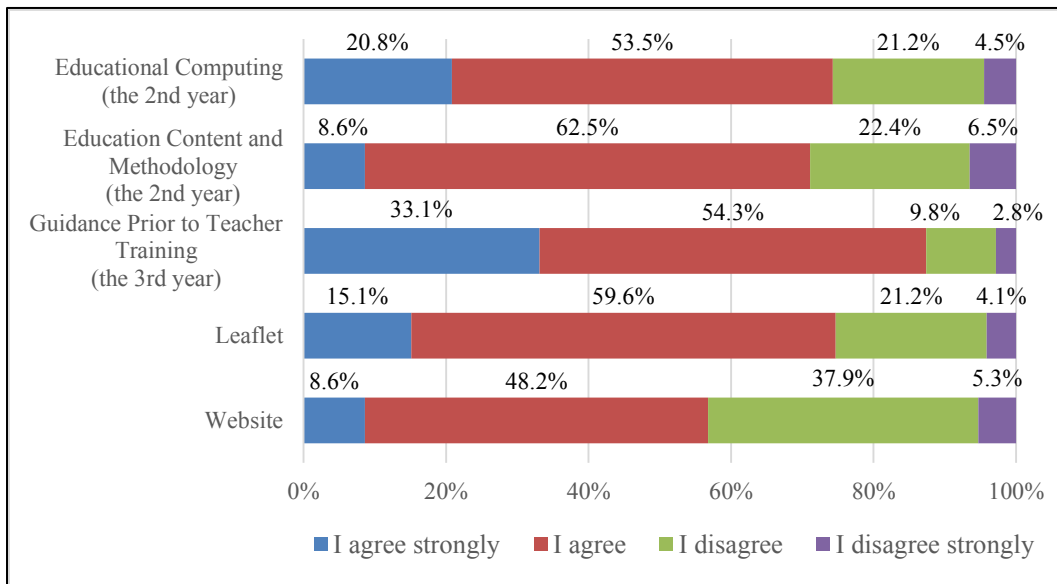


Figure 2: Which undergraduate lectures, or content, do you think helped you to make use of ICT in your lessons?

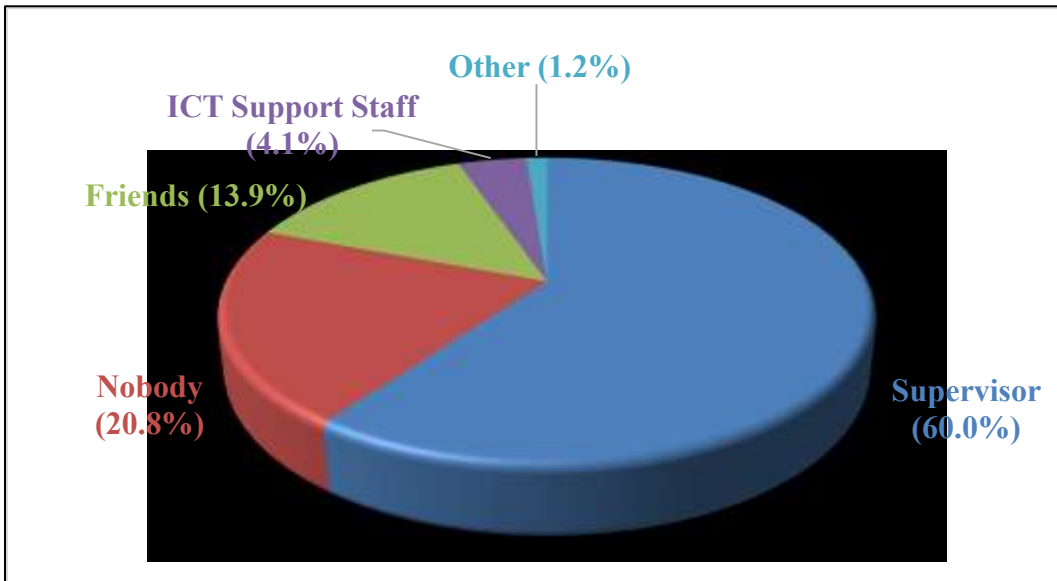
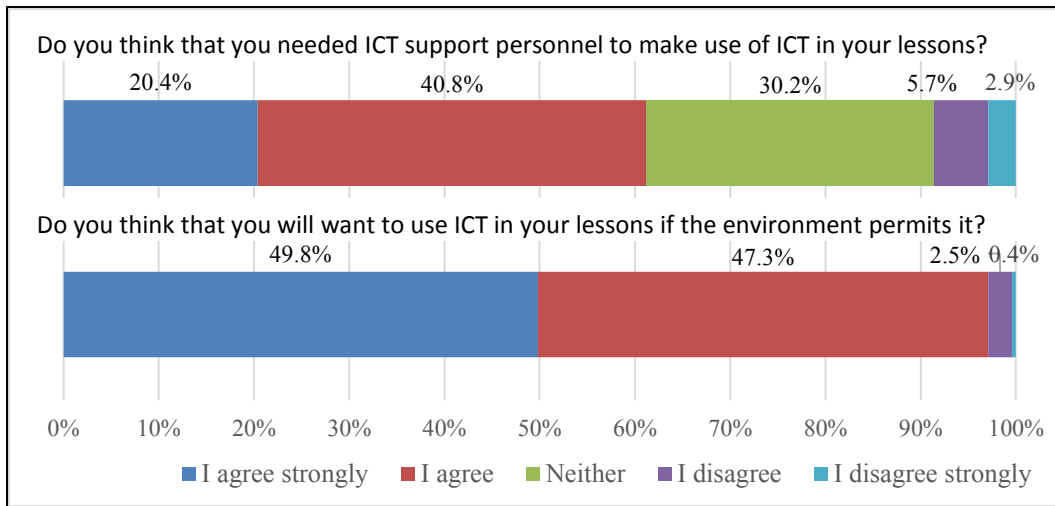
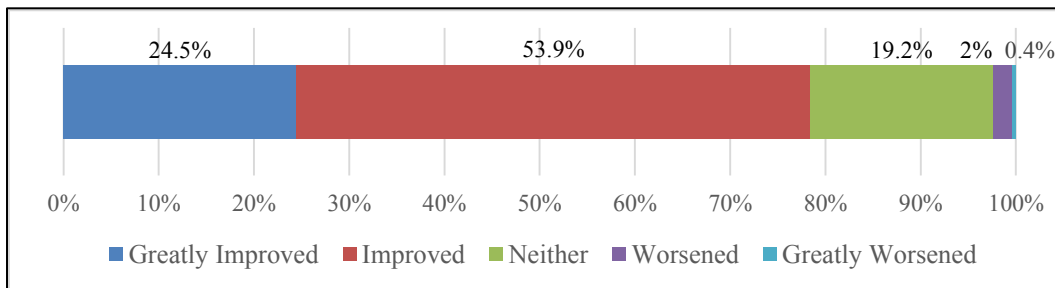


Figure 3: Who did you consult regarding methods for using ICT in your lessons?



**Figure 4:** Response Weighting of Each Questions about ICT-use Lessons



**Figure 5:** Having finished teacher training, how has your impression of ICT-use in lessons changed?

61.2% of the trainees felt the ICT support staff to be necessary (Figure 4). Whilst few of the trainees received advice and support from the ICT staff, many of them felt the ICT support staff to be necessary, and the way that the trainees and the ICT support staff relate to each other is apparent within the scope of this study.

When the trainees were asked about how their impression of ICT-use in lessons has changed, approximately 1 in 4 trainees replied “greatly improved” after their teacher training, and overall approximately 78.4% of the trainees had improved (Figure 5). The reasons for this were as follows:

- Because they learned that the children became more interested and paid more attention when they use ICT.
- Because they received comments on the children’s worksheets such as “it’s easier to understand now” and “I understood because you went through the moves for me”.
- Because, although at first they were worried as to whether they could use ICT in the class and had fears that they weren’t good enough, they were able to realize that they can do it once they saw the children responding to the ICT in their classes.
- Because, for those who had never had ICT in their own classes and didn’t view ICT as necessary, by carrying out lessons using videos and images, they realized how certain things cannot be done without ICT, and how ICT makes certain things easier.
- Because they could see that children were engaged in topics even during break time and after school, and that they were proactive in learning and interested in creative activities using the iPad. In addition, they realized that, by going into more depth than the teaching materials would allow by using ICT, they can expect children to make significant progress in their learning.

The most frequent reasons were that the children’s interest could be increased by using ICT, that their motivation to learn improved, and that the children learned proactively. This shows that by actually using ICT in their

own lessons, the trainees came to realize the features that were described to them in their undergraduate lectures. In addition, it showed that even the trainees who had never experienced ICT being used in a lesson and did not see the necessity of it, underwent a change of perception by using ICT in their own lessons.

When the trainees were asked, if they were provided with an ICT environment, whether they would want to use ICT in their lessons after becoming a teacher, approximately half of the trainees responded "I strongly agree", and overall approximately 97.1% of the trainees answered in the affirmative (Figure 4). We felt in our experience that because the students' experience in receiving lessons using ICT was small, they did not feel the necessity for the computerization of education, and had a negative opinion of ICT. However, by making the use of ICT in lessons mandatory during teacher training, ICT became less of an unknown, and the students' perception of ICT use in education changed.

## Conclusions

The purpose of this study was to clarify whether any guidance or devices are necessary to enable practicing students to make use of ICT in their teaching. For the result, this study revealed that, in conducting lessons using ICT, it was helpful for students to take lectures on teaching methods for ICT-use in education taught by current teachers, and learning through experience how to output their notebook PC to an external monitor. The study indicates that the advice of the students' supervisors at the school was useful in motivating them to use ICT, and that it was important for the teachers at the training school to conduct classes using ICT on a daily basis. By actually using ICT in the classroom during their teacher training, trainees were able to feel the effects of using ICT, seeing how the children's interest in the class and motivation to learn increased and how they learned proactively.

The set curriculum for using ICT in education from pre-teacher training is effective in developing the abilities of undergraduate students of education to teach using ICT, and its practice in teacher training is particularly important. The development of the students' ability to teach using ICT is important from early on, to ensure that they have a high teaching ability by the time that they graduate. In addition, it is important that through practical experience during teacher training, any negative thinking regarding the use of ICT in education arising from the students' ignorance is changed.

## Acknowledgment

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