

The effect of sustainable development activities on consciousness and behavior of university students in Uchiko town

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1. Background and Purpose

Recently activities related to environmental learning and ESD (Sustainable Development Education) are sometimes popular in local governments, but the policy effect is not clearly shown. For evaluating effect, it's necessary to do long-term follow-up focusing on the life of a human being, because the impacts of learning don't immediately effect.

I've already proposed a method to evaluate long-term by paying attention to the lifetime of human beings: Human Life Cycle Assessment (HLCA) for human beings, I gave an announcement at the previous conference.

In this study, practical training in Uchiko town etc. at Shibaura Institute of Technology is as an example. This study aims to analyze whether differences of improving generic skills exist between experienced students and no experienced students by using the HLCA method.

2. The Framework and Method of HLCA(Human Life Cycle Assessment)

2.1 The Framework of HLCA

Effects are calculated by the gap BAU total and the stimulated case(Tab. 1) .

Table 1 how to calculate effect of education by HLCA

Life Stages	Activities B ₁	Activities B ₂	...	Activities B _n	All the stagesΣB _n
Childhood S ₁	Σ(intensityIi* frequencyBIS1)	Σ(intensityIi* frequencyBIS1)	...	Σ(intensityIi* frequencyBS1)	ΣΣ(intensityIi* frequencyBS1)
Elementary school age S ₂	Σ(intensityIi* frequencyBIS2)	Σ(intensityIi* frequencyB2S1)	...	Σ(intensityIi* frequencyBS2)	ΣΣ(intensityIi* frequencyBS2)
Junior high school age S ₃	Σ(intensityIi* frequencyBIS3)	Σ(intensityIi* frequencyB2S1)	...	Σ(intensityIi* frequencyBS3)	ΣΣ(intensityIi* frequencyBS3)
High school age S ₄	Σ(intensityIi* frequencyBIS4)	Σ(intensityIi* frequencyB2S1)	...	Σ(intensityIi* frequencyBS4)	ΣΣ(intensityIi* frequencyBS4)
High school graduation - 20s S ₅	Σ(intensityIi* frequencyBIS5)	Σ(intensityIi* frequencyB2S1)	...	Σ(intensityIi* frequencyBS5)	ΣΣ(intensityIi* frequencyBS5)
30-40 generations (Raising children) S ₆	Σ(intensityIi* frequencyBIS6)	Σ(intensityIi* frequencyB2S1)	...	Σ(intensityIi* frequencyBS6)	ΣΣ(intensityIi* frequencyBS6)
50 years of age or older (Elderly) S ₈	Σ(intensityIi* frequencyBIS8)	Σ(intensityIi* frequencyB2S1)	...	Σ(intensityIi* frequencyBS8)	ΣΣ(intensityIi* frequencyBS8)
All the stages ΣSk	ΣΣSk (intensityIi* frequencyB1)	ΣΣSk (intensityIi* frequencyB2)	...	ΣΣSk (intensityIi* frequencyBn)	ΣΣΣ (intensityIi* frequencyB)

Fig. 1 shows hypothesis and examination method. The best method is to follow-up actions of specific individuals but must follow up for a long time. It takes 10-20 years till children who receive education become adult.

Instead of this way, this study investigate only 2 times : before new intervention and stimulation (P₁) and After intervention and stimulation (P₂). My hypothesis is that the gap of present effect (P₂) is affected by the past intervention and stimulation (P₀).

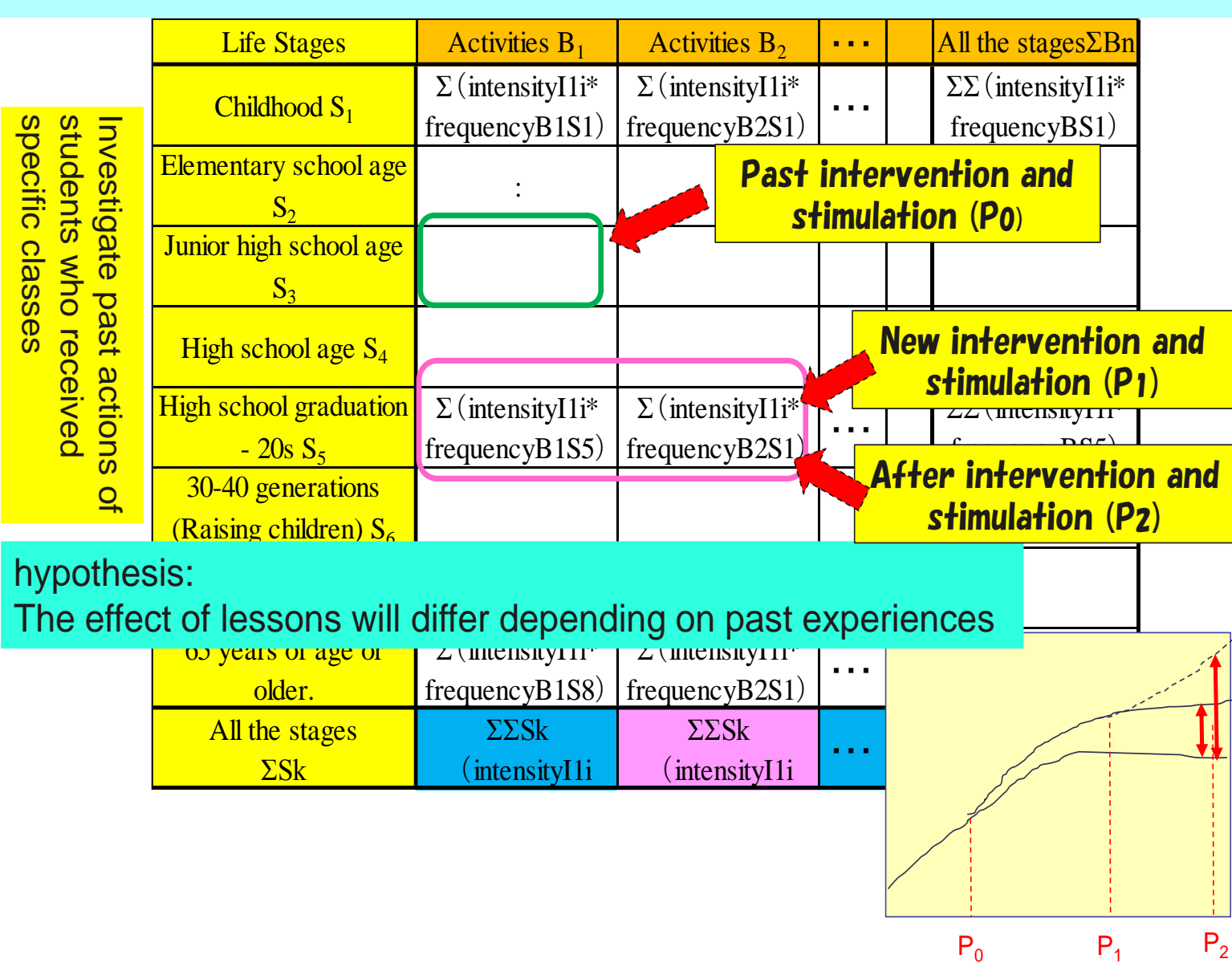


Figure 1 how to calculate effect of education by HLCA

2.2 Research Target and Method

The target is a 2nd grader who attended an outdoor class called "Environmental Field Experience" of Department of Planning, Architecture and Environmental Systems, Shibaura Institute of Technology in FY 2016-17. This class has 6 experience programs. It is not necessary join all practice, but at least should be participated 4 exercises to acquire credits. 22 students attended class and 18 participants went to Uchiko town. After final presentation I conducted a questionnaire survey of all the students and got responses from 20 people.

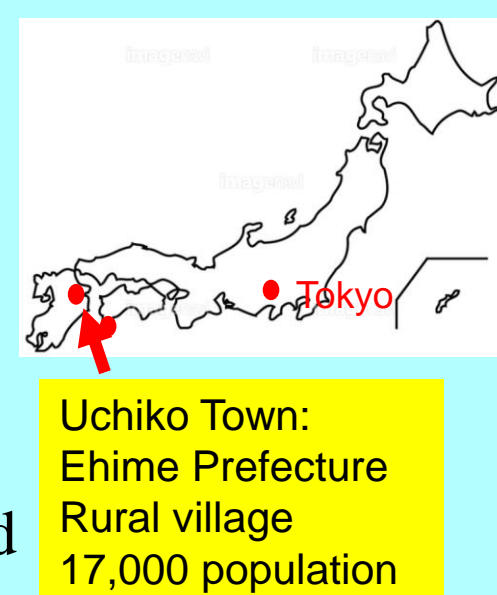


Figure 2 study area

2.3 What is Generic Skill?

"Generic skills" consist of "literacy" that utilizes knowledge to solve problems in a practical way and "competency" that builds good relationships with the surrounding environment.

In times of great change, the ability to update knowledge and skills is required. In other words, "Generic Skills" is also required in University.

3. Result

3.1 Result 1: Generic skills before and after taking class (15 items)

For the 15 individual items of generic skills, comparing ratio of "Agree strongly" + "Agree" before and after the class are significantly increasing(Fig.3).

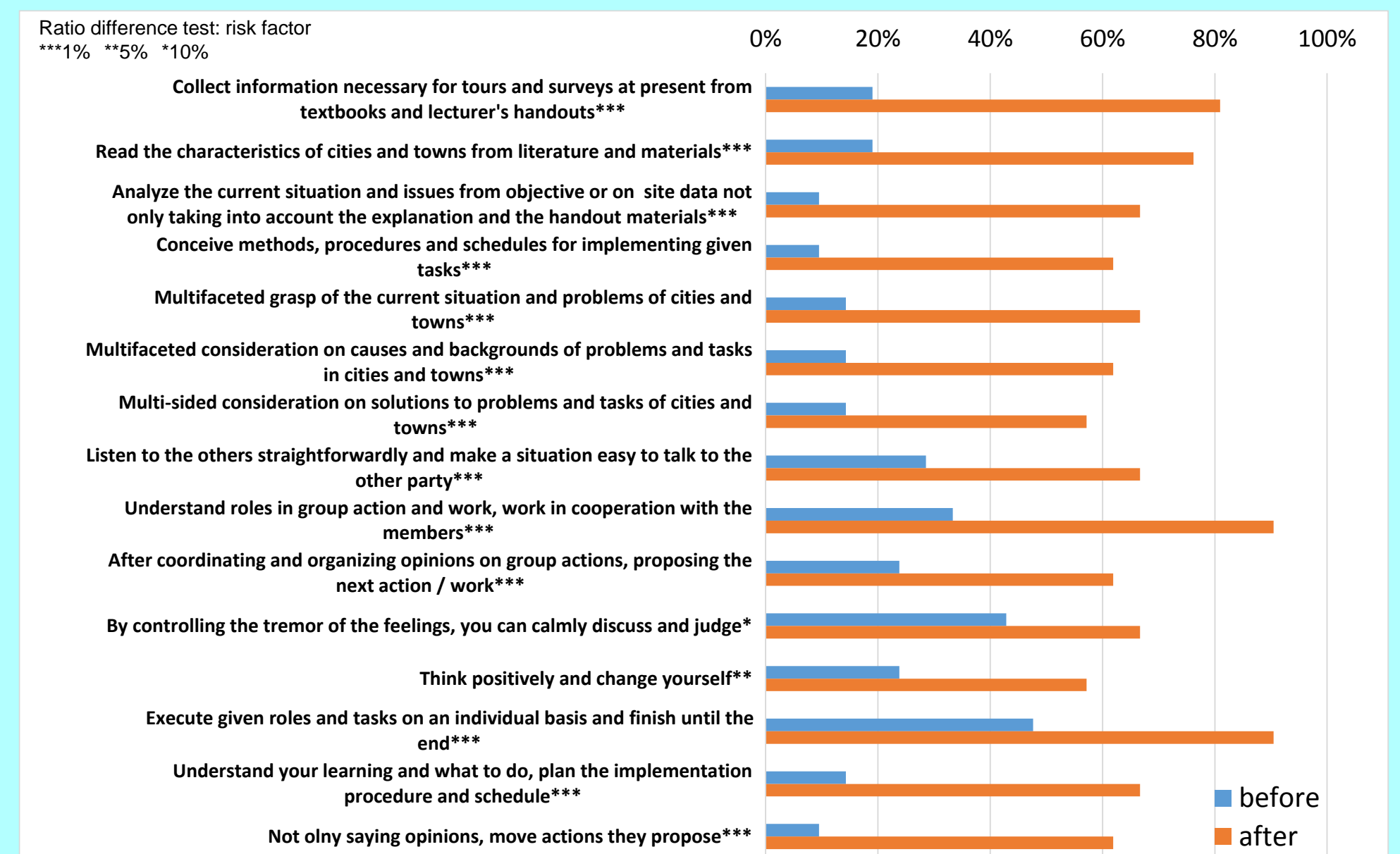


Figure 3 Generic skills before and after taking class (15 items)

3.2 Result 2 – Generic skills before and after (10 items)

The same result was obtained when the 5 items were integrated into 10 categories of generic skills, so it can be said that this class was effective as a whole(Fig. 4).



Picture 1 Practice in Uchiko town

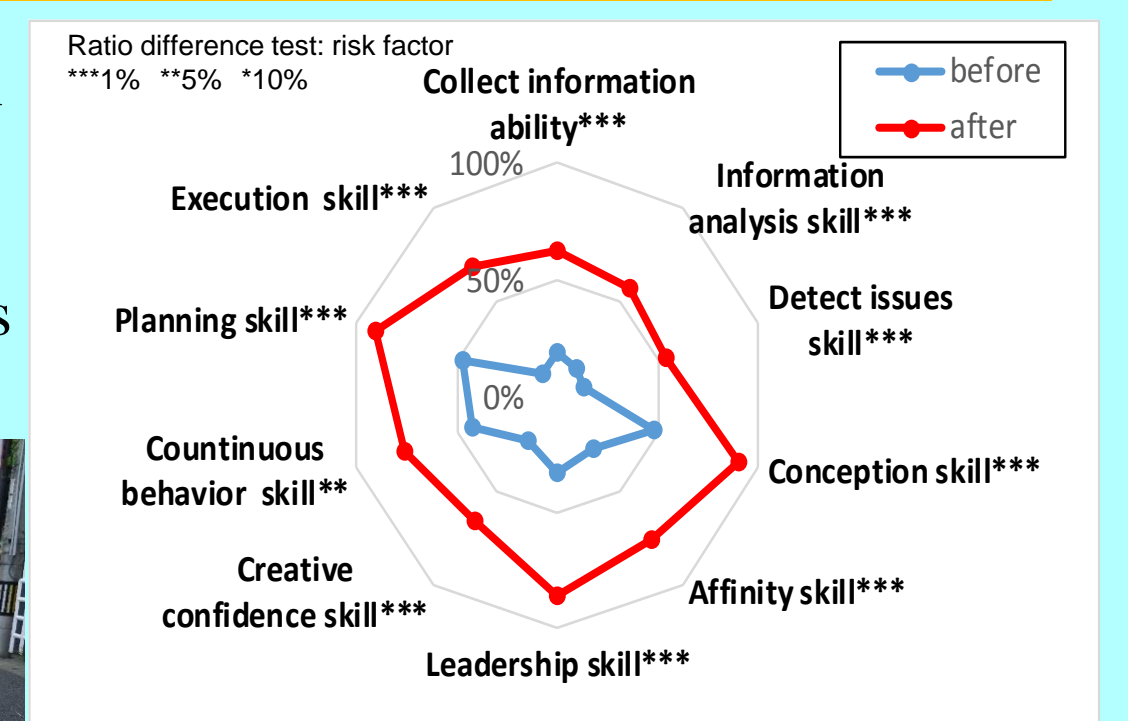


Figure 4 Generic skills before and after taking class (10 items)

3.3 Result 3 – Influence of individual practice for generic skills

Asked for the practice affected tabulated it into 10 generic skills. In 3 literacy items such as "information analysis skill" Kagurazaka is the maximum. In 7 items, mainly "Competency" such as "Affinity" "Leadership", Uchiko is the largest values(Fig. 5).



Picture 2 Kagurazaka (Source: NPO stylish town planning club)

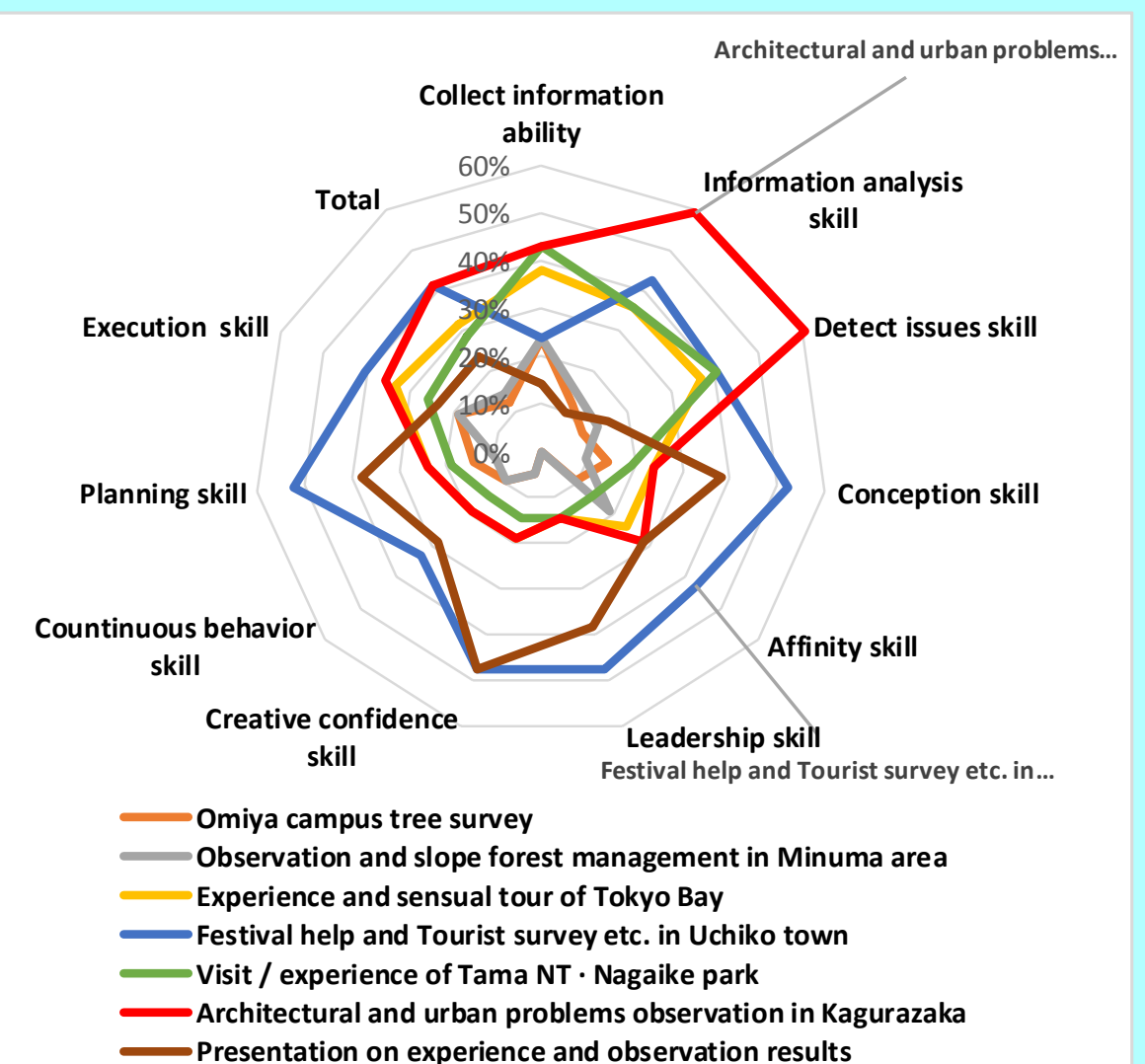


Figure 5 Influence of individual practice

3.4 Result 4 – Influence of existence of past experience

It was grasped by examining differences in generic skills depending on the past experience. Before practice, there was not much difference in the answer depending on the past experience, but after the practical training, there were significant differences in 7 out of 10 items. In other words, the student who has experience in the past has a greater increasing skills by practice(Fig. 6).

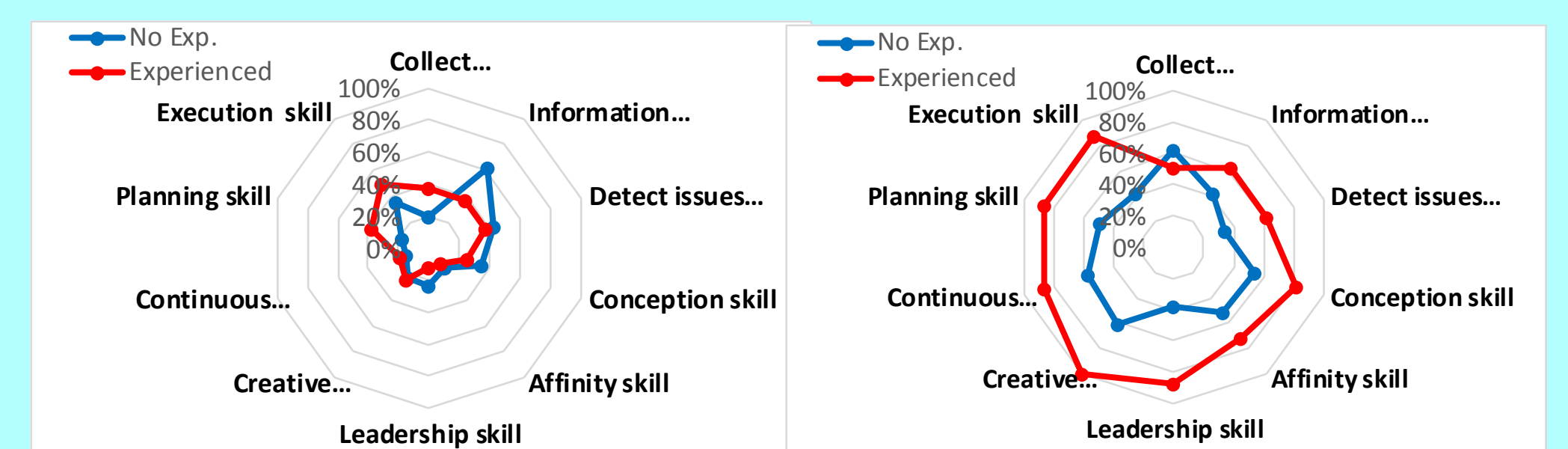


Figure 6 Influence of past experience (left: Before, right: After)

4. Discussion and Conclusion

Doing outdoor practical training for university students has had a great effect on improving generic skills, social contribution and self-study intention. Before practice, there was not much difference depending on past experience, but after the practice, there were significant differences. This shows that it becomes possible to draw out the potential of experienced person by practice. Thus it can be said that it is effective to grasp accumulation of past experience by HLCA(Fig. 7).

Figure 7 Result : Generic Skills Increasing Model

