

The Study on the Education Effects of Experience-Based Activities in the Community in Technical High Schools

— Investigation Analysis of North Japan Area —

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Abstract

Local participation experience type learning is carried out and, in technical high schools, achieves an education effect. In addition, local participation type learning is tried in “period for integrated study” by a new course of study, but activity evaluations of students are not evaluated for a unit concretely; is various.

This study makes clear the education effects and problems by analysis of survey experience-based activities in communities, and suggests new directions based on this research for industrial education curriculum.

Keywords: Community-Based activities, Internship, Curriculum

1. Firstly

1.1 Background and purposes

“Extension lecture” “internship” “problem studies” in technical high school local participation experience type learning is carried out in each school and achieves an education effect. It is done a memoir by “fact and problem of internship, in 14th year”. In addition, the New Course of Study tries local participation type learning in “class for integrated study”, but activity evaluations of students are not good for credit acquisition. Especially extracurricular activities are not properly evaluated in many cases. Studies on New teaching materials can increase the burden of teachers in activities.

Until the actual situation of local participation type experience learning has not been reported precisely, so I have studied for solutions to problems in planning curriculum for technical education and a problem therefore to obstacle to (a regular curriculum).

1.2 Study contents and methods

I raised the following four items to grasp the actual situation of local participation type experience learning and analyzed it.

(1) Do you evaluate it as a regular curriculum? / (2) Are institution facilities good enough? / (3) Is the guidance system perfect? / (4) Is it systematic enough as a curriculum?

I conducted a survey three phases of ① hearings, ② questionnaire, ③ local through

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survey investigation and analyzed them about possibility of local participation type of experience learning as a new integrated study of architecture education.

Next, I summarized problems and tasks relations including facilities and between locals and students and looked into them so that local participation type experience learning would be more effective and rewarding for teachers.

1.3 Survey methods

(1) hearing survey

The survey result in the school where Shirakawa, one of the authors currently work. An activity of the technical high school through the public program at prefectural schools as five-day week school system

I conducted an research into activity contents of a prefectural technical high school architecture department which carried out similar activities to those in (2). The research has shown that activity evaluations of students are not valid for credit acquisition. I decided on questionnaire items based on the problems above.

(2) Questionnaire survey

In 92 corporate judicial person whole country technical high school head association participation schools of North Japan (Tohoku and Hokkaido) (a subject pro-construction), I carried out a questionnaire with the following four items mainly so that I could grasp the actual situation of problems from the results of my hearing survey comprehension between locals and architects and high schools. ① “An open lecture” ② “Internship” ③ “Academic subjects set by schools” ④ “A course work study”

(3) Field work

I looked into two high schools and their activities ① the facilities system of Akita Prefectural Oga Technical High school with a program project of sending assistant teachers to elementary schools as cooperation between elementary schools and high schools ② the architecture department of Miyagi Prefectural Furukawa Technical High school with “the diagnosis of earthquake resistance ability of wooden buildings as cooperation among local, high schools and the Architect Society. I analyze the two schools including 4 high schools in Aomori prefecture on ① specialty in students activity, ② self-initiative in activities, ③ continuity of activities, ④ cooperation with local universities, ⑤ evaluation methods.

With the analysis, I organized the problems in carrying out education curriculum of technical high schools, and I hope to find the possibility of setting activities as integrated education subjects.

2. Efforts by prefectural technical high schools

2.1 Results in open lectures and problems

A theme of “the prefectural school open lecture” that I carried out in Mutsu technical high school in 2002 is in table 2.1. It was held on saturday which is now a holiday. It was a three

Table 2.1 “Open lecture” date themes Mutsu T.H.S.

Date	Day	Theme	Time
1-Jun	Saturday	City exploration “explore your town”	3 hours
15-Jun	Saturday	Work to recycle milk packs “makes postcards”	3 hours
22-Jun	Saturday	Let’ s launch PET bottles “will fly a PET rocket disk”	3 hours
29-Jun	Saturday	Experiencing flying disks and other toys.	3 hours
6-Jul	Saturday	Recycling of aluminum cans “let’s make plates”	3 hours
13-Jul	Saturday	“let’s make cards” using a PC	3 hours

hour event. It took a long time to prepare for it so that we could finish the event in 3 hours.

It took place in the practical rooms of each department such as machine department and electric course and facilities system department. I became the staff and supplement of training room by holding it in plural subjects. The target was that participants could see all the practical rooms and see the current status of technical high schools.

The program has made it easier to understand the current state of schools with characteristics related to local areas. Development can be seen through experience activities. Both students and teachers see originality and a device in activities. Independence and originality, activeness are built up through the participation, which was a great educational effect.

One of the problems is the activities and the reparation for them is time consuming. Another problem is that students’ activities are not properly evaluated. It is necessary to make sure that the activities do not disturb regular classes. The n open lecture is in photo-



Photo 2.1 City exploration

Walking in your own town, you can find something new that you never notice while you are driving and passing through participants walked around their own town.



Photo 2.2 Let’s play PET bottels rocket

Each participant made a PET bottle rocket, and a high school student made preliminary arrangements for complicated parts beforehand. A shout of joy was heard for launching.

Table 2.2 “Open lecture” contents and evaluation of each technical high school

School	Lecture contents	Students' activities	Evaluation method
Aomori T.H.S. Architecture department	“lecture of PC and IT” IT is a PC lecture for the public	No Specific activity 14 times of two hours	Not evaluated
Hirosaki T.H.S. Architecture department	“annual lecture of architecture for parents and children to get interested in architecture and work for handicraft” Keep interest and interest to a building and parent and child cooperate and produce a work.	Assistants to teachers One time of five hours	Not evaluated
Towada T.H.S. Architecture department	“A lecture of handicraft” Experiences of handmade products in the fields of Electric system and machine system and architecture	A leader for primary schoolchildren and junior high students. 4 times of two hours	Evaluate “a case study”
Nanbu T.H.S. Architecture department	“Annual lecture of handicraft” An opportunity to contact of parents and children and am made with a work by a woodwork product	Activity as a leader. 1 time of four hours	1 credit of 35 hours
Mutsu T.H.S. Security system and sanitary engineering and air conditioning	“A house and the lecture of ideal houses study about house environment and make architecture drafting and house models”	Assistants to teachers 7 times of 3 hours	Evaluated in the subject of task study

graph 2.1 and photograph 2.2.

Contents of the open lecture in the architecture department at technical high school are in table 2.2. The contents are peculiar to technical high schools. Aomori Technical High school does not have activity of a student, but independent activity of a student is seen in other schools each. And the activity evaluation for a student varies. Hirosaki Technical High school and Nanbu Technical High school have been practice open lectures continuously. However, The high schools in the prefecture have. Work on PC lectures open to public. However, I people concerned need to work overtime with heavy burden, at the same time, students activity are limited in many ways.

2.2 Educational effects and problems of internship (work experience program)

The internship of Mutsu technical high school started for seniors in the department of sanitation air conditioning facilities system in 1995 as “spot training”. Supported by Association of Prefecture Construction Industry Shimokita branch office, Mutsu Building Society, and the Association of Mutsu Tubing and it out to all the juniors in five subjects. Some of our students in the other departments participate in work experience program to work on types of work, which are irrelevant to their own departments. An education effect in internship has 3 of the following. Through social experience, students can gain work ethics and view of occupation. Interest and learning motives have developed for specialized subjects and enhanced upward mobility. Communicative competence was developed by exchange with generations.

Problems, First, fewer and fewer companies accept the program because of economic recession. Second, a method of activity evaluation of a student in internship is not yet established. Therefore I evaluate internship as a part of training. instead of a regular class. The contents of the program are changing to light work such as plant tour and CAD because



Photo 2.3 Simulated surveying in an office



Photo 2.4 Visit to concrete spots

of softy consciousness.

Scenes of spot training are in Photograph 2.3 and photograph 2.4. Because only juniors participate in the program, they lack knowledge of their specialty and risks so they practice mock surveying. In real construction site, students mainly just go on a tour and listen to simple explanations.

In Aomori prefectures internship has been practiced for many years. Especially departments dealing with construction, industry association have made effort to in crease young labor force for construction. Practicing all those above during students second year have made educational effect greater on interest from students. Some senior students participate in the internship program their summer vacation and get an informal job offer. On the other hand, some students are not willing to work on the program, but they have to because it is one of the classes required. So there has been a gap between students and companies, which accept students. In addition, the program can be a heavy burden for companies because the staffs are

Table 2.3 Evaluation of “school setting subjects” of “spot training”/“visits to companies” each technical high school

School name	Subject	School year	unit	Enforcement contents
Nanbu T.H.S.	“spot training I”	2	1	“A spot training” “Visit to spot in workplaces” “Lectures by invited lecturers”
	“spot training II”	3	1~2	During the time of Internship in the Summer vacation
Aomori T.H.S.	“Internship”	2	1	“A spot training”
	“The engineering basics”	1	A time unit	“Visit to spot in workplaces” (5 hours)
Hirosaki T.H.S. Towada T.H.S. Mutsu T.H.S.	“An industrial Training”	2	It is part of the subject of training	“A spot training” “Visit to spot in workplaces” Writing essays and reports

taken up for the program instead of their regular work and students are not prepared enough for each respective job in companies. When a business establishment gives top priority to security and it is just what of table 2.3 about evaluation of each school and authorizes a unit as a subject “internship” “factory four” about evaluation to “subjects set by schools”. Some of them are subjects for credits. However some others are only for evaluation.

2.3 Subject setting and evaluation by school

In a our school, “a problem study” makes research, things as transfer of “replacement for integrated study” and I set a theme and carry out qualification, cooperation with a school for physically handicapped or mentally retarded children from 2001. Photograph 2.5 shows student’s activities and it was high evaluated in terms of scene design. I learned a plan/a design / an execution process for an experience through door-to-door survey as integrated study. Activities other than “Problem Study” are not properly evaluated. Co operations with schools for the disabled are practiced in all technical high school and have been useful for the making of learning materials, however with some problems of costs.

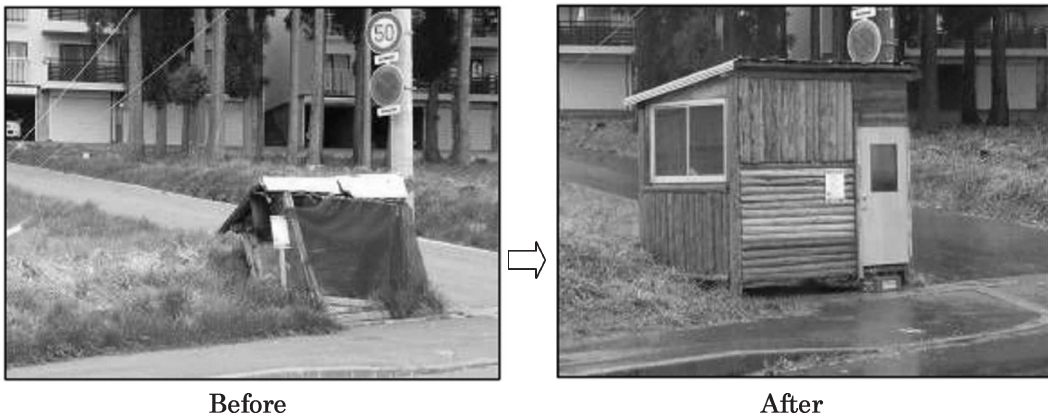


Photo 2.5 reconstruction of the garbage collecting spots with cedar thinning materials in my neighborhoods

The garbage collecting boxes on the way to my school looked so ugly. I prepared thinning materials of cedar wood and rebuilt the box which I designed

2.4 Education effects and problems in real activities

Table 2.4 shows local participation experience type learning the educational effect of local technical high school in Aomori prefecture. It is understood that each school has its own evaluation standard, so similar activities are evaluated differently. There are three types of problems, teachers, schools and facilities and students. I carried out a questionnaire to actual situation look in to those problems in schools in northern Japan.

Table 2.4 Education effects of activities

Cases	Educational effects for students
Open lectures	① Students' autonomy and activeness promoted ② The roles played by high school students through cooperation among 3 generations cleared. ③ An opportunity to reconsider own communities given.
Internships	① A goal in career options set with enhanced outlook and work ethics. ② Increase of interest and learning motivation for specialized subjects. ③ Upbringing of communicative competence.
Co operations with locals	① Students' autonomy and activeness promoted ② Sociality enhanced through interchange with locals. ③ Confidence through practical activities bolstered.

3. The present conditions and problems of local participation experience type learning in northern Japan

3.1 The methodal and the results of the questionnaire

The questionnaire was carried out by mail from July 1, 2004 to August 31, 2004. The questionnaire was mail to 92 Corp. whole country technical high school long association participation schools of Tohoku/Hokkaido area and 46 of them refunded the questionnaire. The rate of the questionnaire return is 50%. A questionnaire item is were ① internship ② open lecture ③ period for integrated study (did it about a problem study) ④ school setting subject, and the items we it analyzed in terms of how they mere evaluated.

3.2 The questionnaire results about of local participation experience type learning

Table 3.1 shows that 85% of the schools surveyed practiced “internship”, 76% “problem study”, and 60% volunteer activities. 60% of the schools surveyed practice “open lecture”, which is less than expected. In addition, cooperation with other organizations was practiced in 7% of the schools surveyed.

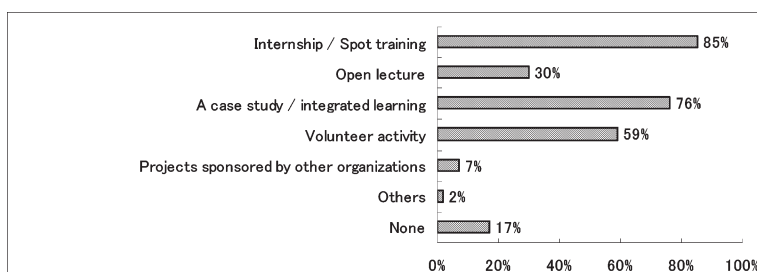


Fig. 3.1 Enforcement situation of local participation experience type learning (multiple answers allowed)

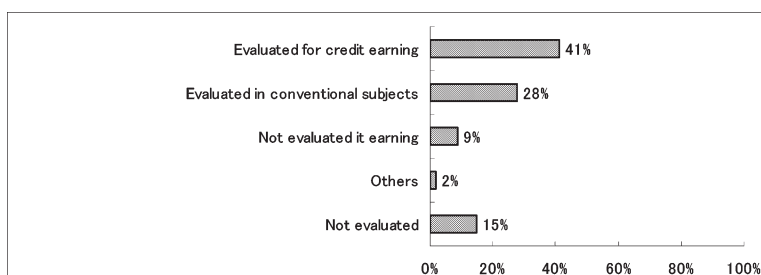


Fig. 3.2 Activities evaluation of local participation experience type learning

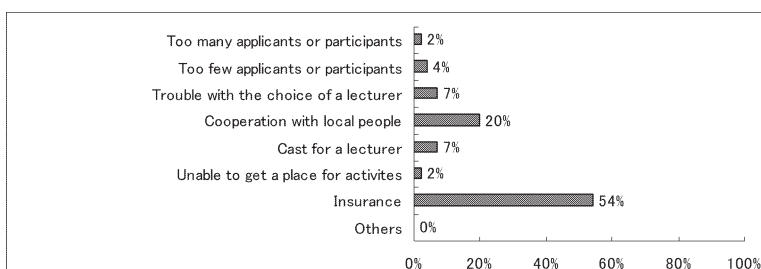


Fig. 3.3 Problems after activities were practiced (multiple answers allowed)

3.3 Evaluation of local participation experience type learning

Table 3.2 shows that local participation experience type learning is a subject for credit a question in 41% of the schools and evaluated as part as part of some subject in 28% of them. 69% of the schools consider local participation experience type learning as an academic subject. On the other hand, 24% of the schools neither evaluate nor practice local participation experience type learning for credit acquisition.

3.4 Theme in local participation experience type learning

Table 3.3 shows that 20% of the problems are about cooperation with local people, 7% difficulty in choice of lecturers, 7% cost.

3.5 Problems in local participation experiences type learning

From the result of the survey, we have found activities of local participation experience type learning such as internship a problem study and period for integrated study are practiced in most of the schools surveyed and people related to school understand the importance of local participation experience type learning. In addition, in practicing local participation experience type learning, there are problems choices of lecturers and problems of reward for them. In addition, in enforcement, I understood things with a problem for expense such as the lecturer choice or compensation, too. Although activities are properly monitored in school, 54% of the schools surveyed take out accident insurance for security.

3.6 Analysis of each item in local participation experiences type learning

(1) The situations of internship (job experience/spot training)

Table 3.4 shows 65% of the internship is 3 day long on school and 2% is practiced during summer or winter vacation. Most of the schools surveyed practice internship within 3 days. In table 3.5 17% of the schools practice the activity for credit acquisition. Table 3.6 shows that 68% of the schools have difficulty in asking companies for. 51% of the schools pointed out students motivations are low. 49% of the schools complained about teachers overwork. One of the other replies the simplification of the program by companies that accept students.

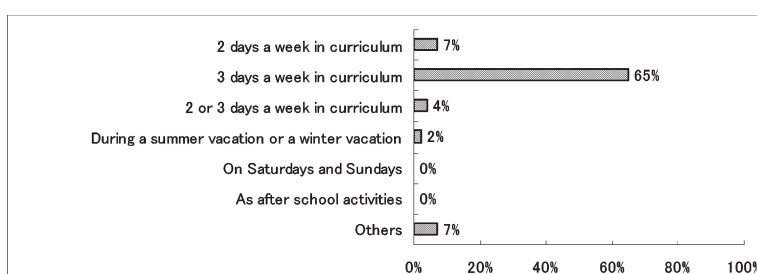


Fig. 3.4 Situation of internship held

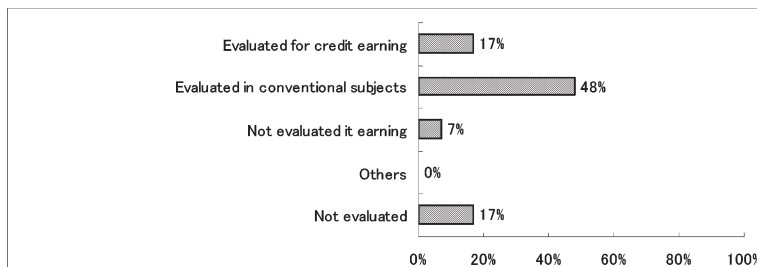


Fig. 3.5 Students' Evaluation of internship activities

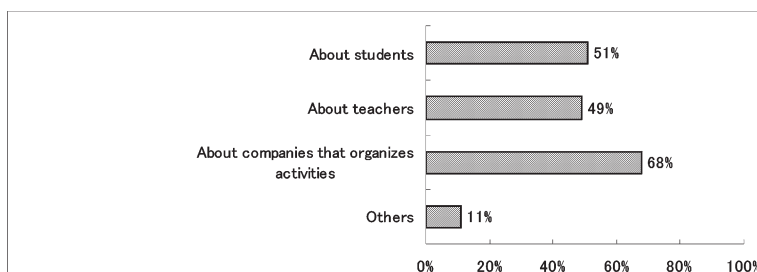


Fig. 3.6 Problem after enforcement (multiple answers allowed)

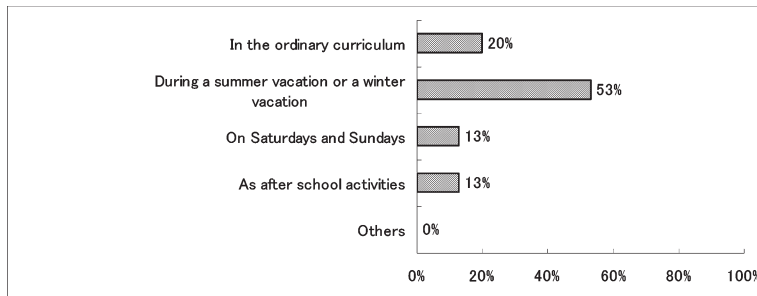


Fig. 3.7 Enforcement situation of an open lecture

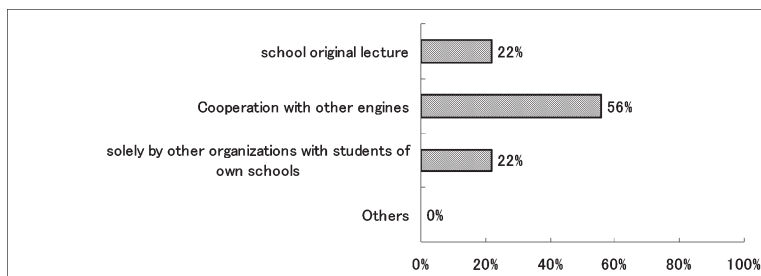


Fig. 3.8 Enforcement system of an open lecture

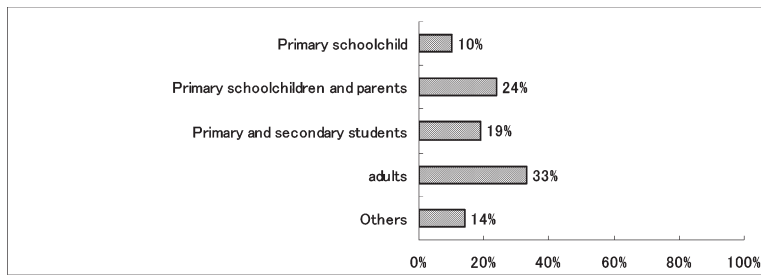


Fig. 3.9 Object of participants

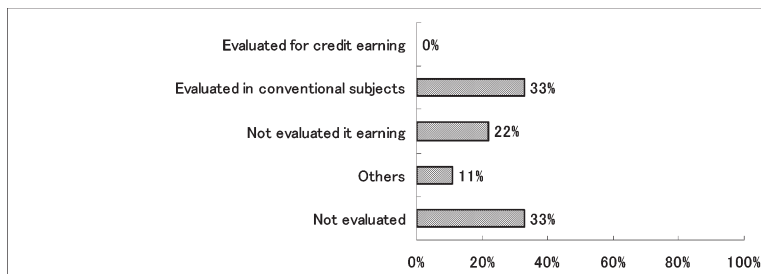


Fig. 3.10 Activities valuation of students

(2) An open lecture

3.7 Table shows that 33% of the schools surveyed have open lectures. Open lectures are practiced during long vacations in 53% of the schools surveyed, and practiced out of class in 26%. According to Table 3.8, 56% of the schools practice the program in cooperation with other institutions and 22% practice it in sending their students. So 78% of the schools have some kind of cooperation with local institutions.

Table 3.9 shows that 33% of the open lectures are targeted for adults and 53% for either elementary or junior high schools. for the purpose of incentives and interests in early childhood.

Table 3.10 is the evaluation of students' activities in open lectures. The thing which does not evaluate does not evaluate 33% together, but is 22%, and there are many cases which are not connected to evaluation although activity of a student is seen ; understand a thing.

(3) "A task study"

Task studies are class for credits in most schools and schools which practice task studies as extra-curriculum (no credits) are not included in the statistic.

3.7 Educational effects and problems in local participation experience type learning

The educational effects of local participation type experience learning, were found in other prefectures like those in Aomori prefecture.

(1) Education effects

- ① Local participation experience type learning improves the ability to solve problems and arouses students' interest and motivation for their respective subjects.
- ② Local participation experience type learning improves communicative competence through exchange opinions with different generations.
- ③ Local participation experience type learning help students acquire work ethics.

(2) Problems in practicing local participation experience type learning

- ① Fewer companies and in situations which accept students for local participation experience type learning
- ② A change of students' attitudes and manners in the program
- ③ Burden increase to teachers
- ④ Appropriate update of training facilities
- ⑤ How evaluation of the activity should be.

4. Situation and characteristics of advanced activities

4.1 case of advanced activities and characteristics

I conducted a survey in two schools, for 5 following items one in Aomori prefecture, the other in some other prefecture.

【Items for analysis】

- (1) Specialty of student's activities

- (2) Student's motivations and creativity
- (3) Duration of activities
- (4) Cooperation with local such as universities
- (5) An evaluation method

(1) As an case of an open lecture, "Parent and Child Architecture Lecture" sponsored Architectural Institute of Japan has been practiced in Hirosaki Technical High School architecture department. A student practiced in the open as assistants.

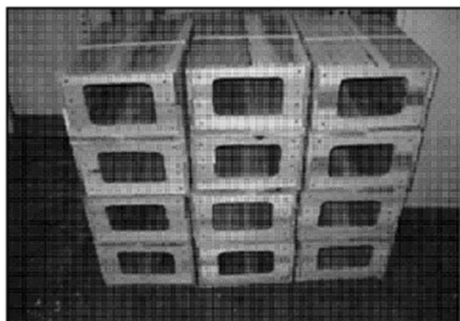


Photo 4.1 Production of a box type spider hole

An activity requiring both a design and precision in production that meet a demand from fishermen. This activity is unique to a technical high school located along the coast.



Photo 4.2 Takko-cho vocational school

Student receives training in 3 training schools. They work hand with hope to be carpenters.



Photo 4.3 Measured the degree of a leaning pillar

I installed a plum bob and checked the degree of the leaning pillar. The pillar was built alone and not supported by a wall or an angle brace.



Photo 4.4 It is measured with a level

With leather beam, I measured the distortion of a floor. The garage was empty and spacious so that we had enough space to work around.

(2) As a case of a cooperation with locals, the first Hachinohe College of Engineering Senior High School (photograph 4.1). craft “takotsubo” a vase to catch octopuses.

(3) As another case of an cooperation with local, Nambu Technical High School practice of local participation experience type learning “carpenter” for would-be craft men, cosponsoring with Nakui agricultural high school, Takko Senior High School, Takko Junior High School and Sannohe, Nagawa and Takko vocational schools. (Photograph 4.2)

(4) As a case of a cooperation with elementary and junior high schools, Towada Technical High School, practice visit class operation to elementary and junior high schools.

(5) As a case of architectural circles and universities, in Miyagi Prefectural Furukawa Technical High School students participate in diagnosis of simple quake resistance ability in wooden buildings. Worked in the building Research Department in 2003, but practicing program made the schedule and plan tighter, so, I have carried it out as task studies in 2004.

(6) As a case of a cooperation with another Akita prefectural Oga Technical High School has been practicing the program of sending their students to elementary schools before graduation since 2001. The students are those who are planning go on to college.

In Miyagi prefectural Furukawa Technical High School a new laboratory building was built in 1995 and it was designed for report making on the spot. I joined quakeproof examination and got a diagnosis after one-hour drive. It is a problem how you evaluate movement time of coming and going. In addition, I observed training room, a training machine, in Oga technical high school, and heard that practical training was not done for 3 years after the teacher in charge had transferred. We have the same kind of problem in using the Machining center training room, to solve and avoid the problem, we need to arrange the teachers for the respective classes and periodically exchange the training subjects and hold seminars.

4.2 Analysis and problems in advanced local participation type experience learning

Table 4.1 a summary of my analysis of the 2 case mentioned earlier.

(1) On specialty of students’ activities, all the high schools surveyed practice activities with their respective specialties except for Akita prefectural Oga Technical High School.

(2) On self-management of students’ activities, Hirosaki Technical high School holds open lectures as extra-curriculum. In Oga Technical High School, seniors after graduation have enough time to take for the program so they can work in a move creative way. In addition, other senior high schools have the in the period of task study and theywork on with respective objectives and motivations.

(3) Towada Technical High School is one of those appointed Ministry of Education, Culture, Sports, Science and Technology, for the program practice for 2 years and all the other schools keep practicing voluntarily.

(4) Cooperation with locals such as one with a university is another example of local participation experience type learning.

Furukawa Technical High School takes special interests in earthquakes and work on with Tohoku Institute of Technology, la local high school and the local architectural circle.

Table 4.1 Analysis of characteristics for advanced activities

School An analysis item	Hirosaki T.H.S. Architecture department	Hachinohekoudai H.S. Architecture department	Nanbu T.H.S. Architecture department	Towada T.H.S. Architecture department	Furukawa T.H.S. Architecture department	Oga T.H.S. Security system and sanitary engineering and air conditioning
	Specialty of students activities	Assistance to making models specialized	Woodcraft specialized	Learning special skills in wood processing specialized.	Guidance of wood processing specialized.	Activities for students aiming for college entrance not specialized
Independence of activity	Carry it out as extracurricular activities.	Works have device and ingenuity.	Students have goals to be carpenters.	Students work hard on task study.	Students work hard on task study.	Activities for students aiming for college entrance
Continuity of activities	Though themes are changed activities are continued	It continued	It practiced annually	Continued as an activity designated by Ministry	It continued	Continued based on the manual of Board of education
Cooperation with locals and universities	Hirosaki city architect club and cooperation	Cooperate with a fishermen's cooperative association / fisherman's	Cooperation of 3 schools, junior high school, high school and vocational school	Cooperation of elementary and junior high school.	Cooperation with authorized architect society, universities, technical high schools in the prefecture	Students perform activities in elementary schools they graduated from.
Evaluation method	Extracurricular activities not evaluated	Evaluated as part of task study	Evaluated as part of the training	Evaluated as part of task study	Evaluated as part of task study	School setting subject called "Registered C" for 1 credit.

(5) On evaluation, the program is a subject for credit acquisition and properly evaluated except for that in Hirosaki Technical High School. I agree that they should make sure the number of classes is properly.

From the analyses above, I have found that there are 4 following tasks.

(1) A task of evaluation of students' activities

With exchange of information and confirmation of the details the program with companies and institutions' the program can be more carefully planned. Keeping records on the program.

Observation tour to the institution during the activity of the program is part of our regular work, which we are as responsible as for regular work, not extra work. I prepared a calculation for time for both activities and transportation to the places takes them into account for evaluations. To arrange safe activities environments, I made sure that all the people concerned are insured for injury and damage.

(2) Problem to teachers and schools

The list of people with special skill to be data based to select companies institution. It is important that all staff in school are informed of the program, and schedules for teachers activities such as club activities should be carefully arranged. Maintenance and update for facilities in schools should be paid attention to.

(3) Challenges to students

Basic behaviors such as greetings should be instructed in advance to improve the ability for communication. I carried out researches for further interests in advance. I learned about the field for the program and learned to operate computer skills necessary for the program.

(4) Before participating the problem

Problems to companies and institutions accepting students although observation tours instead of practice are more common for a safety reason, they still should select practice for students which are irreplaceable. The number of students and schedules should be carefully arranged to keep the burden minimum and the costs for the program needs to be covered by schools. To make the program some how profitable, I placed advertisements of the program.

5. Summary

From the report above, I have concluded that the areas in North Japan have the same types of problems as those of Aomori Prefectures. I chose two senior high schools with characteristic activities I carried out a questionnaire to them. As a result of it, they are practicing new activities, but they have problems of transportation and time taken to move to places for program. Activities such as open lectures, internship and practice experience, activeness and self-initiative help students improve creativity. Interest and learning incentives for specialized subjects have been increased vocational consciousness grew up, too. Communicative competence has been improved by exchange with by interchange with different generations. Teachers can discover many things in students' activities and see last equipment and skills. In addition, I work on education with/characteristics peculiar to locals and ties between school

and locals will be important.

As students go on to higher grades every year the educational activities should be more specialized. Therefore, the number of instructors and teachers should be maintained and their skills should be improved every year. Skills for computers are in more demand and so as better facilities and equipment. Evaluation methods need to be established to count the number of class times and to make clear the contents of program for credit acquisition subjects. In addition, as an example of cooperation between high schools, universities and locals, a university by Professor Tohoku Institute of Technology Reiji Tanaka and a technical high school in Miyagi, cooperation of authorized architect society. Work together for education of earthquake disaster. Earthquake diagnostic class for wooden houses as anti-earthquake education for junior and senior schools to work with the young for safer communities tolerant to earthquake. Therefore I argue that through curriculum system and safety education must be worked on.

From all the above, I think that there are three criteria's to enhance incentives for technical education through Local participation experience type learning.

- ① Rearrangement of curriculum for evaluation as subjects for credit acquisition.
- ② Training and securing instructors and instruction systems.
- ③ Maintenance and up date for better facility.

As a future study, I reexamine the questionnaire items and carry it out to East Japan building education meeting for the study. I would like to make the suggestions which that an area I have made in this report for more interesting activities with cooperation among locals and high schools and high schools and universities.

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- 7) Cooperation promotion business with a senior high schools and an elementary and junior high schools

specialized in 13.14 Heisei year Ministry of Education, Culture, Sports, Science and Technology appointment “A making of thing” class of the small/a junior high student by guidance of students of a technical high school students (Aomori Prefectural Towada Technical High school) 2003.3

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- 9) New high school course of study A guide of formation and administration of a new education course (The Akita Board of Education) 2001.6
- 10) 2004 Mr. high school student dispatch program enforcement summary to a primary schoolchild (The Akita Board of Education) 2004.4