

Creativity-based intellectual property education project at Miyagi National College of Technology part 2 ongoing activities

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Students of engineering are very capable of developing their own creativity by suitable educational contents focused on experiences, starting just after the entering the education system. The Miyagi National College of Technology (MNCT) has been implementing creativity education of experience-based thinking in individual grade levels from 15 to 22 years old in order to train up the students from an early stage for creative and practical engineering. This Creativity-based Intellectual Property Education Project has been adopted by the Japanese Ministry of Education, Culture, Sports, Science and Technology (MEXT), under its contemporary education needs supporting program in 2006. The project is to construct an educational system that has the following characteristics; 1) to collaborate and unify creative education and intellectual properties, and 2) for the students to recognize the importance of the profit that results from their activities, giving them a strong motivation to achieve property rights. We targeted training the environment of students and challenging new businesses by producing innovative products with new technologies. The new organization of our college, Intellectual Property Student Advisory Office (IPSAO), is the centre of fostering human resources specializing in creativity, organizing invention contest, lecturing on intellectual property rights and filing the students' patents. This paper reports the framework of the 2nd year project in detail and the environment of the students' exciting participation, which are performed at MNCT.

Keywords: Creativity education, Intellectual property, Intellectual Property Student Advisory Office (IPSAO), Invention contest, Lecture on patent

INTRODUCTION

Miyagi National College of Technology (MNCT) has been implementing curriculum reform to train students as engineers, having to do with industrial bases, who are wealthy in creativity, from the early stage immediately after junior high school graduation. The 2nd year student who took "the creativity project" subject, newly created by this reform, became the 4th year student in 2006, and reached the step of taking the "synthetic seminar" subject. Thus, the creativity upbringing education system has begun to work in real earnest. It is expanding the system which continues to be "the long-term internship as the part of the graduation research" for the 5th year

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student in the regular course, “the long-term internship”, “the exercise on creativity engineering” for the 1st year student and “the thesis work” for the 2nd year student in the Advanced Engineering Course.

The trial to reform a curriculum that truly fosters the creativity of the student according to their knowledge and experience levels consistently is required now at MNCT. The fruits of students’ activities are useful to society, and it is important to authorize the intellectual property as a right and its process plays an active part in the industrial fields as the technical expert.

Drafting such a viewpoint, the project of 3 annual total pictures applied to the contemporary education needs supporting program in 2006 under the Japanese Ministry of Education, Culture, Sports, Science and Technology (MEXT) was adopted (Itoh, et al., 2007). The title of the project is the cooperation and the integration between early creativity education and intellectual property education - It understands the result of the early creativity practice of a 22 year old from a 15 year olds’ fresh brain; it understands the meaning from the viewpoint of intellectual property and building an experience-based education system to utilize.

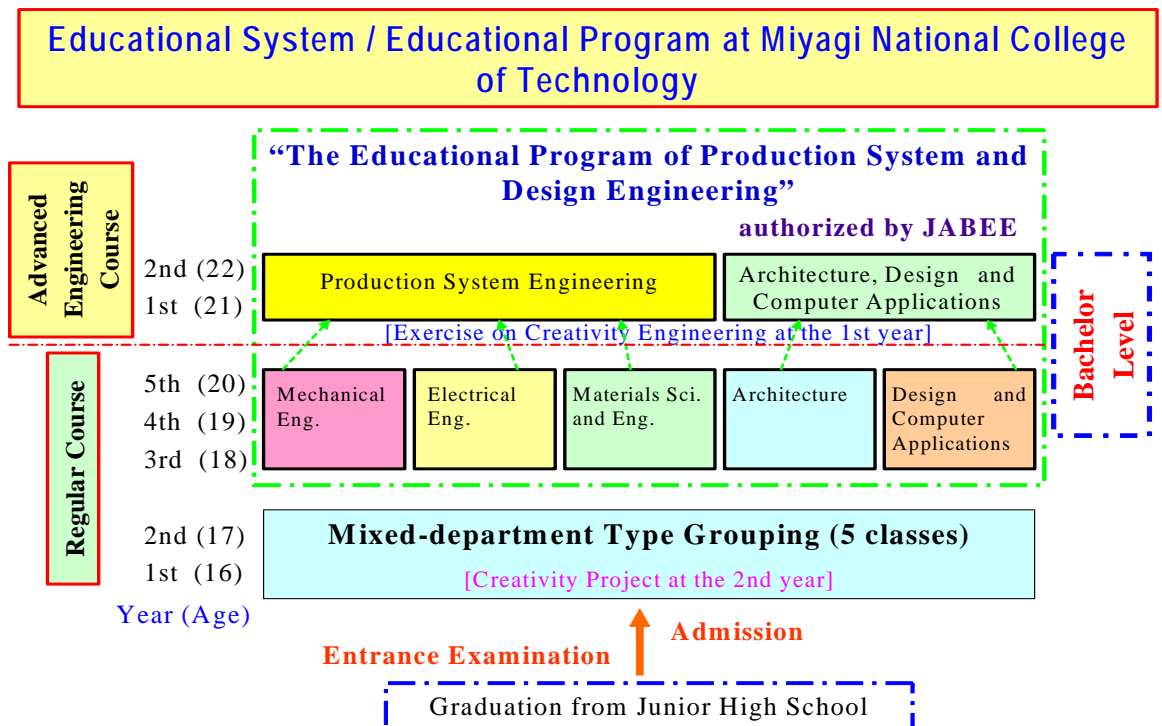
In this report, the introductions of the ongoing project and the progress in 2007 are mainly described.

THE EDUCATIONAL SYSTEM OF MIYAGI NATIONAL COLLEGE OF TECHNOLOGY

Miyagi National College of Technology (MNCT) has set up a regular five-year course of higher education, and also a two-year course of Advanced Engineering over it, as shown in Fig.1. The regular course consists of 5 departments; Mechanical Engineering, Electrical Engineering, Architecture, Materials Science and Engineering, and Design and Computer Applications. The Advanced Engineering Course also consists of 2 courses; “Production System Engineering” and “Architecture, Design and Computer Applications” (Publicity Committee of MNCT, 2008).

The educational program of Production Systems and Design Engineering of the advanced course of MNCT was authorized by the Japan Accreditation Board for Engineering Education (JABEE), in the field of engineering science in April, 2003. This authorization proves that the education done at the advanced course of MNCT stands on equal footing with universities both in name and reality.

FIGURE1
Educational System of MNCT



OVERVIEW OF THE ADOPTED PROJECT

The aim of the adopted project is to provide the human resource upbringing system, in which the up-bringing of knowledge-building placed a practicing technical expert training course with invention as the possible intellectual properties creation course. The students who have experienced the course will create a new technology and a new product in the scene of manufacturing and bring rich human resources with idea power which daringly challenges new business.

The overview of this project is shown in Fig.2. This project cooperates and integrates the experience thinking type creativity education to be implemented according to the grade consistency with the lower grade period. Further, it makes students recognize a profitability to the society of the activity result of the student and the importance of authorizing it as intellectual properties as a right. This project builds the education system of the creativity and intellectual property which educates the process.

Specifically, it does intellectual property education according to the development step, establishes a system of cooperation with e-learning, leader training, and the fullness of the practicing intellectual property education by graduate research and invention contest and the establishment of the patent application support system for the student. The evaluation and the improvement of the education system are also contents to implement.

FIGURE 2
Overview of the Adopted Project

| Collaboration and Unification between the Creativity Education and the Intellectual Property Education to Encourage the Students as I.P. Talents | | | |
|--|-------------------|---|---|
| | | Creativity Education | Intellectual Property Education |
| Advanced Engineering Course | 2nd (22) | Thesis Work | [Patent Application Stage] |
| | 1st (21) | Exercise on Creativity Engineering, Internship, Thesis Work | Research for Needs, Embodiment, Leader Training, Patent Filing, Patent Seminar, Invention Contest |
| Regular Course | 5th (20) | Graduation Thesis, Internship | Practical Patent Lecture |
| | 4th (19) | Synthetic Seminar, Internship | [Cancellation Stage of Patent Allergy] Technical Writing, Basic Patent Lecture |
| | 3rd (18) | [Introductory Stage to the Specialty] | Invention Contest |
| | 2nd (17) | Creativity Project | [Introductory Stage to I.P.] Leader Training, Invention Contest, Introductory Patent Lecture |
| | 1st (16) | [Introductory Stage to the Basis for Engineering] | |
| | Year (Age) | | For all the Students: e-Learning on I.P., Support of Application for Patent Contest |

EFFECTIVENESS FOR THE EDUCATIONAL REFORM

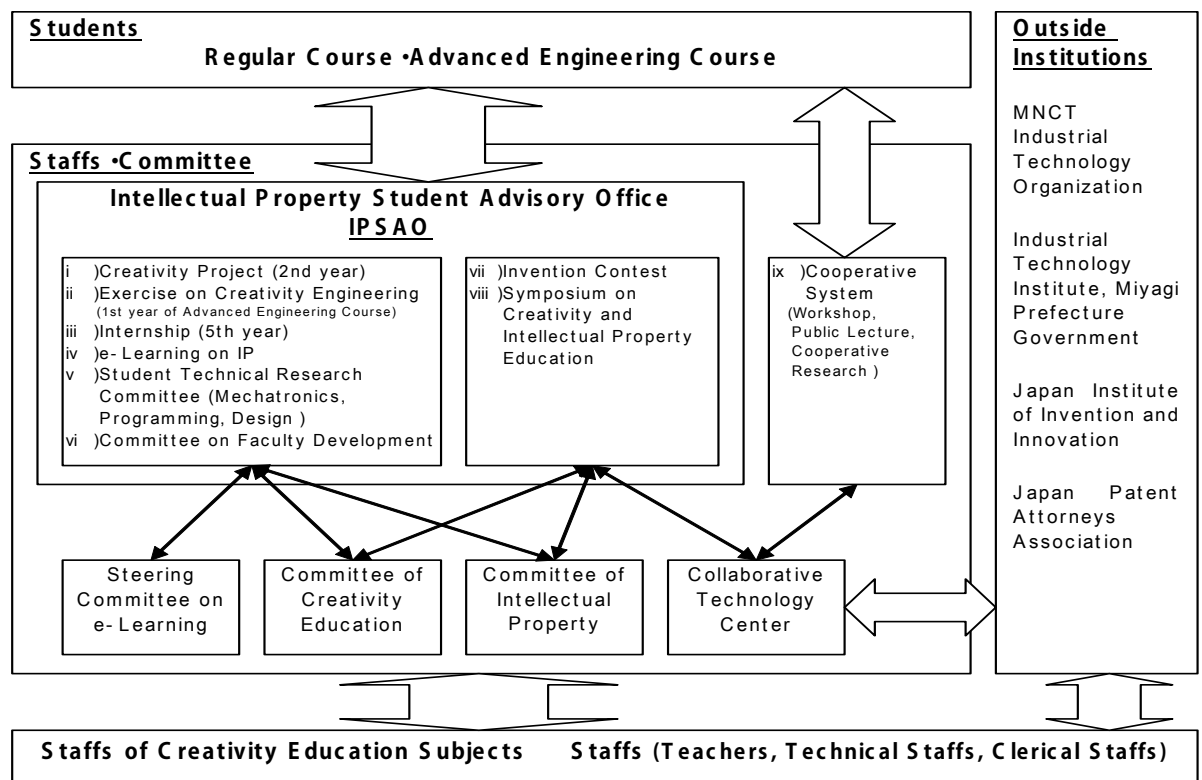
Creative activities of students are useful to society and become vital when authorized as intellectual property rights and the process plays an active part in the industrial world as the technical expert. The necessity and the establishment of such an education system are indispensable in bringing rich human resources with idea power which daringly tries to challenge the development of new technology, the new product and the new business in the industrial fields of the future.

The quality of the contents and the archives for the education of creativity and intellectual property which were based on creativity education subjects are raised every year, and the range to handle them will spread. Then, the education assets of the education of high creativity and intellectual property are accumulated at the altitude of the main school, and the foundation of the valid utilization is built. The promotion of the industry, too, can be contributed to in addition to the possibility of the patent merit rising in the form which involved a student doing graduate research and invention contest by the cooperation with the industrial world and living intellectual property education's being able to be realized.

EXECUTION SYSTEM OF THE PROJECT

The execution system of this project is shown in Fig.3. The Intellectual Property Student Advisory Office (IPSAO) plays a main role in promoting this project, which is newly established at the collaborative technology center. IPSAO consists of 13 members including teachers, technical staffs and clerical staffs. IPSAO is in the centre of fostering human resources specializing in creativity, organizing student invention contests, lecturing on intellectual property rights and filing students' patents.

FIGURE 3
Execution System of the Project



PROJECT EXECUTION PLANNING IN 2007

The project execution plans in 2007 and early 2008 are as follows:

April, 2007

1. Hosting of "the introductory patent lecture"

April-September, 2007

2. Activity support of "Creativity Project", Making results of "Exercise on Creativity Engineering" archives and Keeping up the contents for e-learning, 3. Hosting of "the Patent Contest"

May-October, 2007

4. Hosting of "the Student Invention Contest" at the MNCT Festival

June-October, 2007

5. Surveying the educational activities for students on intellectual property in domestic and international universities

October, 2007-February, 2008

6. Activity support of “Exercise on Creativity Engineering”, Making results of “Creativity Project” archives and Keeping up the contents for e-learning

November, 2007-January, 2008

7. Hosting of “the basic patent lecture”, “the practical patent lecture” and “the patent seminar”

December, 2007-March, 2008

8. Education of the Patent Filing process in “Exercise on Creativity Engineering” and Support of the Patent Application

The following year since then, we host “the graduation research and invention contest” among north eastern region technical colleges and “the symposium about the creativity and intellectual property educations”.

REPORT ON THE EXECUTION OF THE PROJECT

Surveying the Educational Activities for Students on Intellectual Property

We visited Beijing Institute of Technology (China), as shown in Fig.4, to grasp the technique and to make a student understand an intellectual property mind by the education and research course, a way of distributing a right in case of making intellectual properties, to attempt to improve a student support system and to do field research. Beijing Institute of Technology has started an innovative center since 2000. The purpose is knowledge acquirement by the student and the training of innovation ability.

FIGURE 4.

Situation of Surveying Intellectual Property in Foreign Countries
(Surveying at Beijing Institute of Technology, China)



Student Invention Contest at MNCT

The Student Invention Contest was held at the MNCT festival on October 27th and 28th, 2007. The aim of the contest was to grasp the results of creativity education and to show that it is possible to connect improvements of the education contents with an attempt for power of planning and the plan of the student and the executive ability, and to improve the contents of the subject in MNCT.

The situation of the student invention contest is shown in Fig.5. We hosted an invention contest in 4 departments of the idea department (the theme is free), the problem department (the ideas about going to school or dorm life, setting a theme from the daily life convenient article), the creativity project department and the exercise on creativity engineering department.

The number of applications was fourteen for the idea department, five for the problem department, three for the creativity project and two for the exercise on creativity engineering. The application was introduced contents by the contest via the middle examination (It brought in the opinion of the extramural expert, too.) and the subscription status fixed the excellent prize and the winning a prize of each department by vote. But, the creativity project and the exercise on creativity engineering department depended on the recommendation of the guide teacher.

There were 141 pieces of participation in the vote within 2 days. It guided in three which won a prize in the idea department and the problem department for the patent application. As a result, it did 3 patent applications in the end of March, 2008.

FIGURE 5
MNCT Student Invention Contest in 2007



1) The display



2) The awarding ceremony

The Patent Lecture

We had the support of the Miyagi Prefecture branch of the Japan Institute of Invention and Innovation, and the 90-minute patent lectures are implemented for the students as follows:

1. The introductory patent lecture for the 2nd year students in the regular course-178 people,
2. The basic patent lecture for the 4th year students in the regular course-73 people,
3. The practical patent lecture for the 5th year students in the regular course-26 people,
4. The patent seminar for the 1st year students in the advanced engineering course- Total 33 people. Each lecture of item 1)-4) was held once. The numerical value represents the number of participants in each lecture.

After each lecture was over, we gave a questionnaire to each student. The questions were as follows:

Question A: Did you have an interest in the patent and the invention after you took the lecture? (Question A is excluded in the questionnaire at the lecture 4))

Question B: How about the subject on Intellectual Property? (Please select from the following alternatives. Ans.1: It should begin as the lecture and make a unit. Ans.2: I don't attend a lecture even if it makes a unit. Ans.3: I think after seeing a syllabus. Ans.4: The others including the non-response.)

The answers are shown in Table 1 and Table 2. Most of the participants were interested in the patent and the invention. We think that students know the necessity of the Intellectual Property Education.

TABLE 1
Answers (Yes) to Question A in percentage terms

| Lecture 1) | Lecture 2) | Lecture 3) |
|------------|------------|------------|
| 60 | 74 | 73 |

TABLE 2
Answers to Question B in percentage terms

| Answer | Lecture 1) | Lecture 2) | Lecture 3) | Lecture 4) |
|--------|------------|------------|------------|------------|
| 1 | 28 | 37 | 38 | 18 |
| 2 | 24 | 4 | 12 | 21 |
| 3 | 44 | 48 | 42 | 45 |
| 4 | 4 | 11 | 8 | 16 |

CONCLUSIONS

In this report, the introduction of the description of business in the 2nd fiscal year of the project and the progress were described. There were a lot of subscriptions in the MNCT invention contest. In this year, the MNCT invention contest is fixing as the regular event in our college. The entire IPSAO member can not hide pleasure and the wish of the surprise in the height of student's interest to "the invention and the patent" and the height of the interest of the people of the protector.

We feel that the intellectual property mind penetrates into the students through the implementation of the patent lecture and the invention contest, the class of the technical writing. We think that the creativity education system which was the conscious of the intellectual property including the effective use of these facilities is arranged in the future, that the students who have experienced the course will create a new technology and a new product as rich human resources with the idea power which daringly challenges new business can be brought up.

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