IMPROVEMENT OF STUDENT’S PATENT ACQUISITION COMPETENCY AND INTELLECTUAL PROPERTY RIGHTS EDUCATION

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Abstract

Many Southeast Asian nations advocate strengthening patent protection as part of economic policy today. The educational institutions of each country follow this policy of strengthening patent protection, and students are taught in engineering education to acquire abilities necessary for product development.

However, many universities are confused in the enforcement of intellectual property rights education. What kind of intellectual property rights curriculum should we establish? How should we find teachers? In the first place, how should we teach intellectual property rights as a subject?

In higher education in Japan, intellectual property education is divided into two aspects: "the understanding of the intellectual property system" and "ability to invent." The former is carried out by specialists in law, such as a patent attorney or a jurist who knows the intellectual property system well; while the latter is given by professors having experience of product development. The knowledge of law teachers about product development is imperfect, and they have been thought to provide problematic instruction in product development. However, many students invent many new products with the guidance of the law teacher every year at the specific National Institutes of Technology (NIT), and several students acquire patent rights.

In this article, I will discuss various educational methods based on the cases of National Institute of Technology, Miyakonojo College, to show how to make students’ ideas into patent rights. It is thought that a theory of alternative dispute resolution in civil affairs disputes can contribute to improving the situation in patent acquisition for such a student. Mainly, this will be discussed as I refer to a principle of legal theory—Felstiner’s “naming–blaming–claiming” model—in relation to a civil affairs dispute about the competency required of a student for the patent and the acquisition.

Keywords: Intellectual Property Rights, Idea, Innovation, Patent, Competency, Legal Science

Introduction

In Asian countries including Japan, intellectual property education is taking an essential role in engineering education now.

In Japan, the Ministry of Education, Culture, Sports, Science, and Technology (MEXT) updated the course of study in elementary and junior high schools in 1998 and in high schools in 1999. Both of them were upgraded under the education program named as "manufacturing education: MonozukuriKyoiku.” Each educational institution has worked on each subject in the education about intellectual property rights in school education positively by the revision of these guidelines.

The Japanese government has been trying to realize a nation based on the creativity of science and technology. This policy views ethics as human resources supporting Japanese technology in the revision of the course of study of the higher education system, and it becomes essential to bring up creation-related rich, high-quality human resources—so to speak, a senior engineer having knowledge of intellectual property rights.

As a matter of course, the Japanese government revised a similar curriculum in higher education. Each university planned to carry out interdisciplinary engineering education that was to become the foundation for manufacturing and reorganized large-scale departments to produce engineers in the compound-specialty domain. Furthermore, the incorporation of the national universities, which the Japanese government carried out in 2004, helped to set up an organization and a budget so that each university freely and voluntarily became part of it. Each university applies high standards of merit and adopts an aggressive approach leading to the activation of the field of study and improvement in the education of science and technology.

Intellectual Property Policy in Japan

The Japanese government proposed the "Nation Declaration Policy by Intellectual Property” in 2002. Prime Minister Junichiro Koizumi made a policy speech on the strategic use of intellectual property at the Diet on February 4, 2002. He announced that Japan was to become an "intellectual property country,” endeavoring to make intellectual property a key driving force behind national prosperity.
The first point to be discussed was the Japanese IP policy. The term “intellectual property right” (IPR) is defined in the IPR Basic Act, in Article 2-2 as follows:

“intellectual property right” as used in this Act shall mean a patent right, a utility model right, a plant breeder’s right, a design right, a copyright, a trademark right, a right that is stipulated by laws and regulations on other intellectual property or right pertaining to an interest that is protected by acts.

The guidelines of the Strategic Formulation on the Intellectual Property of July 2002 led to the enactment of the IPR Basic Act in December that year. Since 2003, the IPR Strategic Program has been published. The issues regarding IPR education at National Institute of Technology (NIT) colleges and in higher education were first mentioned in this publication (Table 1). How has IPR education been introduced to NIT colleges?

Table 1. Strategic Policies of “IPR Country” in Japan

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>1998</td>
<td>Patent Office published “the Standard Textbook for Studying Industrial Property Rights” and started the “School Assistant Programs for IPR Education.”</td>
</tr>
<tr>
<td>2001</td>
<td>METI established &quot;IPR Curriculum.&quot;</td>
</tr>
<tr>
<td>2002</td>
<td>PM Koizumi’s speech: &quot; Intellectual Property Country&quot; (February); Intellectual Property Strategy Formulation Guideline (July); Intellectual Property Basic Act (November)</td>
</tr>
<tr>
<td>2003</td>
<td>Intellectual Property Strategic Program 2003 announcement</td>
</tr>
<tr>
<td>2011</td>
<td>MEXT added IPR education to industrial, commercial, and agricultural high schools.</td>
</tr>
</tbody>
</table>

Outline of IPR Education in Japan

IPR education, the Japanese scholars, as well as students had to say enough educational content and are also provided (INPIT 2010). As highlighted in Yoshii (2012) in particular, systematization of intellectual property teaching through college tuition is insufficient from the subjective standpoint of supervising teachers, but an expanded curriculum has not been sufficiently built up. Compared with the educational institutions in Taiwan and Singapore that actively use the curriculum and problem-solving techniques, at present, we have not been keeping pace with them in this domain. To ensure promotion of internationalization of colleges in the future, the time has come for us to modify the curriculum, to set the global standard for intellectual property education and to understand the current state of intellectual property in the ASEAN countries.

Most NIT students cannot fully understand the IPR legal system due to its complexity. Consequently, IPR has been taught as a special subject and only a few NIT colleges have offered it.

It is currently difficult to conduct the IPR Strategic Program due to overlaps and discontinuities in the roles of various offices in the Japanese government. It is commonly thought that the Ministry of Economy, Trade and Industry (METI) handles administrative duties and policymaking, METI controls its sub-organizations and administers the Japanese patent policy formulated by them. For example, the Patent Office, one of METI’s sub-organizations, is an administrative office for patents, design registration, and trademarks. The National Center for Industrial Property Information and Training (INPIT), another METI sub-organization, was formed to run the J-Plat Pat, Intellectual Property Rights Digital Library.

In 1998, aware of the importance of IP education, the Patent Office published the “Standard Textbook for Studying IPR” and began to support school programs for IPR education. Based on this textbook, the Patent Office and IPDL produced the “Standard Curriculum for IPR” and launched the “School Assistant Program for IPR Education.”

Although METI and its sub-organizations have contributed greatly to the dissemination of IPR knowledge, it has not been able to provide enough opportunities to students to study IPR at school. Because the Ministry of Education, Culture, Sports, Science and Technology (MEXT) has ultimate authority over educational divisions, METI could not spread IPR education among schools. Until 2002, the Japanese education system did not feature IPR in its curricula, and MEXT had no plans to train secondary education teachers in the subject. Only a few teachers have been aware of the importance of IPR, and they have taught this subject without licenses. In fact, there are only nine lines that mention IPR among the 230 pages of the most-used Japanese social science textbook for secondary-education students.

Since IP’s role in higher education is at an early stage, there are several issues concerning the start of new education in this field. Osaka Kyokki University launched a program called the Education System for Teachers to Teach IPR in 2005. The Patent Office and Yamaguchi University also conducted a study titled “Research Project on IP Education at the University” in 2006.

Professors can teach students high-technology skills and awareness through their own initiative. However, there are not enough lectures on “creating new ideas,” such as developing mind maps, quality control circles, etc.

MEXT established the 5th Science and Technology Basic Plan, approved in a cabinet meeting on January 22, 2016. This plan stipulated the following:

ii) Upbringing, achievement promotion of a variety of human resources through technology innovation.

Besides, technical support for the Program Manager to implement a plan, manage research, and ensure progress on the project on,
a research administrator (URA: University Research Administrator) to control of the whole research activities with a superintendent-in-charge, a research facility, various human resources such as technology transfer, human resources, and university management resources are necessary to promote creation of high intellect and social implementation in a university and a public research organization. Also, human resources specializing in management of human resources, technology, and intellectual property to take on the corporate strategy of new business development and changes in the business model are demanded to promote the standard implementation of the intellectual resources quickly and effectively in companies. While such human resources make use of the specialty that each person has, it is essential to create the environment that can show ability in the right person for the right place. However, the qualitative-quantitative mismatch of human resources between a university and the industry may occur, and the human resources are getting such jobs are short; and also, there are problems such as each person’s ability to cope with a rapid social change occurs.

In this plan, MEXT predicts the drying up of human resources with the ability for intellectual property operation. For this reason, personnel training in IPR that can provide global leadership is urgent for Japan. However, it can hardly be said that intellectual property education is being imparted in an environment where it is regarded as necessary in the Japanese higher education system. In many educational institutions, lectures for the IPR class are often taken by teachers lacking expertise in the subject.

IPR Education at NITs

How has IPR education been conducted in higher education in Japan, especially in NITs? According to NIT’s syllabus, only 8 of the 61 schools (13%) teach IPR subjects. However, the number of NIT colleges joining the School Assistant Program for IPR Education is 15. About half of those schools have no lecture titled IP, rather teaching IPR in lectures with different names or through club activities. Surveying the actual situation from a different standpoint, lectures in NIT colleges are separated into two types: product-based teaching (PBT) and classroom-based teaching (CBT). While PBT consists of product development, CBT involves instruction in the IPR legal system and the patent application process. In NIT colleges, many of the IPR lectures given are PBT (Table 2).

Most NIT colleges have taught IPR using the “Standard Textbook for Studying Industrial Property Rights” with the “IPR Curriculum.” By using this textbook, most students can understand the concepts of IPR within just twenty-five hourly lessons. Additionally, this textbook is provided free-of-charge by INPIT, so students taking PBT lectures can use free textbooks.

An exceptional example of IPR education among the standard technical NIT colleges is the NIT, Miyakonojo College. At this college, a professor delivers intellectual property rights education about practices, which is rare in Japan. In addition to explaining the legal system, the professor trains his students in "the thought process that leads to the invention," using mind mapping and the KJ method.

Table 2. Details of IP education lectures in NIT colleges

<table>
<thead>
<tr>
<th>Year</th>
<th>Product-based teaching</th>
<th>Classroom-based teaching</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>10</td>
<td>3</td>
</tr>
<tr>
<td>2007</td>
<td>10</td>
<td>3</td>
</tr>
<tr>
<td>2008</td>
<td>10</td>
<td>3</td>
</tr>
<tr>
<td>2009</td>
<td>10</td>
<td>3</td>
</tr>
<tr>
<td>2010</td>
<td>12</td>
<td>3</td>
</tr>
</tbody>
</table>


Education through both PBT and CBT provides opportunities for students to understand IPR. Nowadays, there are many IPR education lectures at NIT colleges. In 2007, INPIT studied when the teachers had begun to study IPR. The results are shown in Table 3. It must be noted that many of the teachers at NIT colleges have no experience of, or license in, IPR education.

Table 3. Stage at which teachers studied IPR in Japan

<table>
<thead>
<tr>
<th>Year</th>
<th>Product-based teaching</th>
<th>Classroom-based teaching</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>7</td>
<td>4</td>
</tr>
<tr>
<td>2007</td>
<td>15</td>
<td>9</td>
</tr>
<tr>
<td>2008</td>
<td>31</td>
<td>6</td>
</tr>
<tr>
<td>2009</td>
<td>32</td>
<td>2</td>
</tr>
<tr>
<td>2010</td>
<td>9</td>
<td>0</td>
</tr>
</tbody>
</table>

Source: INPIT (2007:23)

There is a further point that needs to be clarified. The IPR curriculum established by INPIT lacks some elements: while it provides an effective means for students to understand IPR legal systems within a short time, it offers no guidance on “creating new ideas.”

A Case of NIT, Miyakonojo College

NIT, Miyakonojo College (NITM) is one of a few Japanese higher education institutions having a curriculum in IPR from 1985. They have an IPR class for senior students, attended by approximately 60 students every year.

Teacher guidance policies are apparent, and they are thoroughly helped through the patent law system and how to put out ideas. As an example of the former, they were prepared for the national examination on intellectual property management skills; and as an example of the latter, they were thoroughly trained in the
mind map creation method and the KJ method. Besides, all students are obliged to exhibit in the patent contest organized by the Patent Office.

Remarkably, this class has been conducted by faculty majoring in law. Up to now, three teachers have helped students acquire ten patents in the patent contest. To put it briefly, senior students in NITM need knowledge of IPR rather than manufacturing skills.

The patents obtained by students are by no means sophisticated, and only a few have been commercialized. However, the Japan Patent Office grants licenses to students after recognizing originality. Our students are smart enough that they will be able to acquire patents with minimal effort. The intellectual property faculty of NITM believes that what is necessary for students with basic knowledge of engineering is not further knowledge of engineering but knowledge of intellectual property and the practical aspects of acquiring patents.

Teaching guidance by such law teachers is low in teachers' evaluation from specialized departments. But as N. Luhmann (2012) states, the information initiative lies not on the originator but on the recipient. It is the patent office, not the teacher, who evaluates the students' inventions, and eventually granted patents, recognizing the novelty and creativity of their invention. Although the inventions acquired by students may be peculiar to them, experiencing the process of obtaining licenses helps them to grow as next-generation inventors, to create innovative inventions, and to change the world. Even for Thomas Edison, inventor among inventors, the first invention was "a device that automatically transmits telegrams to get rid of work."

Naming-Blaming-claiming

Such IPR education in NITM can be conceptualized based on a conflict model by Felstiner and others. Discussion by Felstiner and his colleagues focuses on the stage where conflict development does not result in litigation, and discusses factors that cannot be appealed in court. According to that theory, they state the importance of exploring why the legal system does not function effectively in the real world as follows (Felstiner 1980):

But disputes are not things: they are social constructs. Their shapes reflect whatever definition the observer gives to the concept. Moreover, a significant portion of any dispute exists only in the minds of the disputants. These ideas, though certainly not novel, are important because they draw attention to a neglected topic in the sociology of law—the emergence and transformation of disputes—the way in which experiences become grievances, grievances become disputes, and disputes take various shapes, follow particular dispute processing paths, and lead to new forms of understanding. Studying the emergence and transformation of disputes means studying a social process as it occurs. It means studying the conditions under which injuries are perceived
or go unnoticed and how people respond to the experience of injustice and conflict.

Furthermore, Felstiner analyzes the process until these conflicts reach the court as being into three stages.

Chart 1. Naming–blaming–claiming model

| naming | A state where people can perceive infringing acts. |
| blaming | A state where the victim can be conscious of who the victim is suffering for. |
| claiming | A state where people can inform the specified counterparty of the fact of infringement and seek relief against it. |

Their assertions that showed that no conflict reached these stages and did not develop into a trial are supported by legal sociologists all over the world. This model is also useful in patent rights, and it is also helpful to show why students’ inventions do not achieve patent acquisition.

Through the concept of Felstiner et al., it becomes clear that there are many ideas buried in the world that are never realized as inventions. What we can actually see is only the idea filed with the Patent Office; and many ideas have disappeared namelessly in this way.

Students have sufficient capability regarding inventions, but they are burying ideas for patent acquisition. It is unfortunate that the small numbers of patent applications by students is seen as a problem of students’ ability. If the teacher believes in the student’s potential and if the idea does not lead to patent acquisition, it is thought necessary to discuss the factors according to the stages developed by Felstiner et al.

Chart 2. IPR naming–blaming–claiming model

| IPR naming | A state where you can realize that the idea is worthy of the invention. |
| IPR blaming | A state that can claim to be a patent on what we invented. |
| IPR claiming | A state that claims to be an invention and is able to file a patent application. |

Analyzing the reason why students do not file a patent in this way, as a process in three stages, and providing instruction accordingly leads to nurturing engineers who voluntarily create inventions. The case of NITM is that in the student’s patent application it is not engineering literacy but IPR competency that has a significant effect. A faculty advising on IPR should instruct the students, paying attention to the question, "why do students file a patent for that idea?"

Conclusions

In Japan, IPR in higher education is currently focused on providing students engineering knowledge through engineering faculty members. Unfortunately, this was not the result of adequate consideration, and was born out of a struggle due to budget reduction from MEXT and the lack of teachers. As shown in this paper, effective IPR education is no longer to give students knowledge of engineering but to enable competencies to develop ideas and to make presentations in contests and the like.

It is only a small attempt of one Japanese school that forms the grounds from this conclusion. As a matter of course, by an environmental difference and a national difference, the conclusion is more likely to change. Perhaps the reader might take this as an opportunity to test the same in each school.

Acknowledgements

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References


