

FY2021 WIPO Japan Office Study Report

**WIPO Japan Office Research on IP - Research
on the review and improvement of the use of
teaching materials for the promotion of
intellectual property education for youth**

March 2022

**Japan Institute for Promoting
Invention and Innovation**

Overview

<Background>

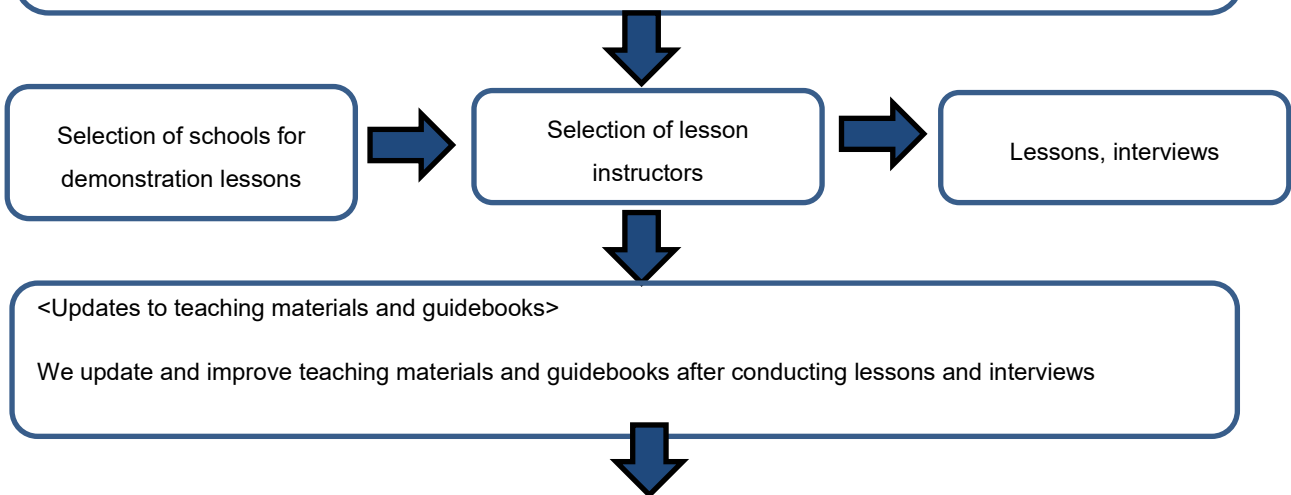
- Students both in Japan and around the world have an inadequate understanding of intellectual property rights, so familiarizing young people with intellectual property rights is an issue that needs to be addressed.
- In 2018, we created intellectual property teaching materials for students and intellectual property beginners entitled "Let's Develop Ideas" as well as teaching notes as part of a WIPO Japan Fund project. These teaching materials present examples using subjects familiar to students to concretely convey the importance of creative thinking and the significance of processes and intellectual property rights, and they include a work section for practical thinking so that students can learn through experience.
- Japan does not have enough educators and instructors engaged in intellectual property education, and there are still few examples of these teaching materials being used in educational settings.

<Purpose>

- The purpose of this study is to demonstrate the suitability and availability of the content by, for example, conducting lessons using these teaching materials and teaching notes to determine whether the content is truly easy to use in actual educational settings and easy for students to understand. After these lessons, we collect feedback from students and instructors and improve the teaching materials and teaching notes to create teaching materials that are easier for students and instructors to use and understand.

Preparing trial lessons and reports using "Let's Develop Ideas"

- Two regular schools (Super Science High Schools [SSHs])
- Two technical colleges



<Preparation of report>

- Study and analysis of the suitability and availability of teaching materials, including demonstration/verification (demonstration lessons) at four schools
- Updates to teaching materials and guidebooks
- Potential teaching materials and dissemination methods for the future

Summary

I. Background and purpose of study

Students in Japan and across the rest of the world have an inadequate understanding of intellectual property rights. To promote future intellectual property education in Japan under the “Intellectual Property Promotion Plan 2016”, the Intellectual Property Creation Education Promotion Consortium was established in January 2017 and materials have been prepared by relevant ministries and agencies, including the Cabinet Office, on systematizing and institutionalizing intellectual property creation education. In particular, the Ministry of Education, Culture, Sports, Science and Technology decided to include more items related to intellectual property education in the curriculum guidelines for elementary, junior high, and high schools starting from the revised curriculum guidelines for 2017, 2018, and 2019.

Nevertheless, such education is only offered at relatively few high schools. Furthermore, there are not enough intellectual property educators/instructors in Japan, so familiarizing the nation’s youth with intellectual property rights is an issue that needs to be addressed.

As a Japan Fund Project for 2018, the WIPO Japan Office initially created intellectual property teaching materials for students and intellectual property beginners entitled "How to Explore Ideas" in English and Japanese for high school students in developing countries. The Japanese version was published in 2020 and the English version in 2021, with guidebooks for instructors (teaching notes) made available in both Japanese and English.

However, there are still few instances of these teaching materials being used in educational settings, meaning that we have been unable to verify the suitability and availability of the content, e.g., whether the teaching materials and guidebooks are truly easy to use in actual educational settings and are easy for students to understand.

This study was thus conducted for the primary purposes of creating teaching materials that are easy to use and understand in educational settings and making them available to students and instructors by conducting lessons using these teaching materials and educator/instructor guidebooks on a trial basis, compiling the feedback from students and

instructors into a report, and revising the content of the teaching materials and guidebooks in keeping with this feedback.

II. Overview of study methods

We began by gaining an overview of the innovation and intellectual property education available in high schools (including mentions of innovation and intellectual property in curriculum guidelines) constituting the background to this project.

Next we conducted a study using trial (demonstration) lessons, for which a total of four schools – two regular high schools (accredited super science high schools [SSHs]) and two technical colleges – were selected as venues for trial lessons using the “How to Explore Ideas” teaching materials. Interviews were conducted with instructors and teachers after these lessons about the adequacy and effectiveness of the teaching materials. In addition, pre- and post-lesson questionnaire surveys of students were conducted to measure changes in their attitudes on intellectual property. The demonstration lessons themselves utilized various supplementary teaching materials and worksheets to make the lesson content more concrete in line with the basic concepts presented in the current teaching notes. Outside instructors were selected for the regular high schools, while professors were asked to conduct lessons at their own technical colleges.

III. Overview of trial lesson results and effects

Interviews conducted with instructors and teachers after the trial lessons elicited the following opinions, while learning about the familiar topic of instant ramen and cup noodles, the instructor also used additional well-known subjects in his original course outline, which allowed the students to think for themselves and the class to proceed in an interactive manner. According to the results of the student questionnaire, the willingness to engage in creative activities (F1) and interest in intellectual property (F3) increased significantly at all schools after the class as compared to the levels which existed beforehand. Interest and awareness of intellectual property (F3) showed a particular increase at National Institute of Technology, colleges that include classes on intellectual property within their normal curricula.

The results of the pre-and post-lesson student questionnaire surveys indicate that the lessons were effective in enhancing awareness and understanding of intellectual property rights, and that the contents of the teaching materials and guidebooks were quite suitable and useful in educational settings.

IV. Updates to teaching materials and instructor guidebooks

The contents of the teaching materials and instructor guidebooks (teaching notes) were examined and updated based on interviews with the instructors and professors who conducted the trial lessons.

There were no requests made during the interviews for changes or revisions to the teaching materials but, given the need to occasionally add new examples other than that of Chicken Ramen in line with the interests and characteristics of high school students, a number of conceivable examples were proposed.

It was also suggested in the interviews that the guidebooks include more sample lessons so that classroom teachers can better envision the lessons. The guidebooks were accordingly revised and updated, with sample lessons included.

V. Recommendations on utilizing teaching materials

This study demonstrated that the use of the teaching materials can raise the level of the intellectual property education provided to Japanese high school students, so it is recommended that the teaching materials and the revised teaching notes be widely disseminated and utilized. Since it was found from the questionnaire survey results and the interviews that the educational effects were greater at regular high schools than at technical colleges, we propose to focus dissemination and educational efforts on regular high schools. However, only two ordinary high schools and two technical colleges were involved in this study and, given the need to verify these educational effects at more high schools, we propose to continue trial lessons using the teaching materials.

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I. Background and purpose of study

Students in Japan and across the rest of the world have an inadequate understanding of intellectual property rights. To promote future intellectual property education in Japan under the “Intellectual Property Promotion Plan 2016”, the Intellectual Property Creation Education Promotion Consortium was established in January 2017 and materials have been prepared by relevant ministries and agencies, including the Cabinet Office, on systematizing and institutionalizing intellectual property creation education. In particular, the Ministry of Education, Culture, Sports, Science and Technology decided to include more items related to intellectual property education in the curriculum guidelines for elementary, junior high, and high schools starting from the revised curriculum guidelines for 2017, 2018, and 2019. These guidelines have already been implemented in elementary schools from Academic Year (AY) 2020 and in junior high schools from AY2021, and they are to be applied in high schools from AY2022. The new high school curriculum guidelines include many intellectual property topics in general courses on civics, information science and art as well as in the business-related topics newly incorporated into specialist courses. Initiatives to develop human resources mindful of intellectual property through intellectual property education at high schools were undertaken as early as AY2000 by the National Center for Industrial Property Information and Training (INPIT) with its “Experimental Collaboration School Project on the Effective Use of Standard Textbooks on Industrial Property Rights” for technical high schools, and this project has been pursued incrementally at College and National Institute of Technology from AY2001, at commercial high schools from AY2002, at agricultural high schools from AY2003, and at regular high schools (specialist courses) from AY2008. Nevertheless, this project has only been implemented at a few regular high schools. Furthermore, there are not enough intellectual property educators/instructors in Japan, so familiarizing young people with intellectual property rights is an issue that needs to be addressed.

As a Japan Fund Project for 2018, the WIPO Japan Office initially created intellectual property teaching materials for students and intellectual property beginners entitled "How to Explore Ideas" in English and Japanese for high school students in developing countries. The Japanese version was published in 2020 and the English version in 2021, with guidebooks (teaching notes) made available in both Japanese and English¹. These teaching

¹ WIPO Japan Office Website: https://www.wipo.int/about-wipo/ja/offices/japan/outreach/ip_textbooks.html

materials are structured in an easy-to-understand manner that presents examples using subjects familiar to students, and they convey the importance and processes of creative thinking as well as the significance and specific details of intellectual property that supports invention and creativity. They also contain output-type worksheets by which learners can tackle practical issues first-hand and learn about creation through experience. Guidebooks have been prepared for instructors and the lessons are designed so that the education can be completed in one to two class time slots (50 minutes x 2), making the materials relatively simple and easy to use for educators/instructors. Because the materials are available in both Japanese and English, the English version can be used in Japan for English-language education as well as in developing countries.

However, there are still few instances of these teaching materials being used in educational settings, meaning that we have been unable to verify the suitability and availability of the content, e.g., whether the teaching materials and guidebooks are truly easy to use in actual educational settings and are easy for students to understand. To verify these, it is important that these teaching materials and guidebooks be actually used in educational settings and that feedback on this use be provided. In addition, the teaching materials, etc., should be appropriately updated in line with the feedback received to ensure they are easier to use in educational settings. This study was thus conducted for the primary purposes of creating teaching materials that are easy to use and understand in educational settings and making them available to students and instructors by conducting lessons using these teaching materials and educator/instructor guidebooks on a trial basis, compiling the feedback from students and instructors into a report, and revising the content of the teaching materials and guidebooks in keeping with this feedback.

II. Summary of study method and results

1. Overview of innovation and intellectual property education in high school

As mentioned above, many topics pertaining to intellectual property education were included in the curriculum guidelines for elementary, junior high and high schools, starting with the 2017/2018/2019 revised curriculum guidelines, in accordance with the "Intellectual Property Promotion Plan 2016". The high school curriculum guidelines are scheduled to come into effect in AY2022, and the importance of intellectual property education is expected to grow further in future. These topics have already been incorporated in trial lessons at high schools (specialized courses) and College and National Institute of Technology as a matter of national policy, and the "AY2020 Report on Practical Details of the Intellectual Property Capacity Development School Support Project and the Intellectual Property Creation, Practice, and Utilization Capacity Development Project"² published by the National Center for Industrial Property Information and Training (INPIT) showed that outside instructors holding lecture presentations and seminars has proven an extremely effective and efficient means of instruction. The report also showed that the most often used teaching materials were the "Industrial Property Rights Standard Textbook" and "Intellectual Creation Activities and Intellectual Property" (a booklet issued by INPIT in February 2013)³, and that other more convenient teaching materials are required. On the other hand, with lessons at regular high schools only focused on "learning" about intellectual property law, efforts by both teachers and students are needed to orient these lessons toward "understanding" the law.

Intellectual property education is not itself a self-contained subject and it can be taught within all subjects. The curriculum guidelines feature three pillars – acquisition of knowledge/skills, cultivation of self-expression and critical thinking skills, and development of learning skills/humanity – but, simply put, such education can be covered in all subjects. However, the terms "innovation" and "invention" tend to be considered courses and items best covered in social studies (acquisition of knowledge) and science (acquisition of skills) despite being of relevance to all students. For example, there is a tendency to think of "copyright" as being

² National Center for Industrial Property Information and Training (INPIT), "FY2020 Report on Practical Details of the Intellectual Property Capacity Development School Support Project and the Intellectual Property Creation, Practice, and Utilization Capacity Development Project" <https://www.inpit.go.jp/jinzai/educate/coop/development/report.html>

³ National Center for Industrial Property Information and Training (INPIT), Intellectual creation activities and intellectual property, https://www.inpit.go.jp/jinzai/educate/manual/souzou_chizai.pdf

relevant only to the subjects of Japanese, music and art, and the idea that they are relevant to all subjects and courses that use self-expression and critical thinking skills has not made sufficient headway. The Patent Agency's March 2019 "Intellectual Property Education for Enjoyably Creating New Things/Ideas: Lesson Guides for Creating the Future - Examples and Tips for Learning Guidance Applicable Immediately in All Subjects"⁴ verifies instances of intellectual property study in 11 subjects: Japanese Language (General), Classical Japanese, Civics, Mathematics, English, Information Science, Music, Basic Physics, Basic Electrical Engineering, Basic Industrial Arts, and Global Environmental Science. It concluded that recognizing the importance of (company- or self-employed) adults safeguarding and respecting rights and obtaining fundamental knowledge by adding the essence of intellectual property rights to subjects is essential.

The importance of intellectual property education has been expounded since the "Intellectual Property Promotion Plan 2016" and, with many topics having been included in the new curriculum guidelines, a strategy for enhancing intangible property during and after the COVID-19 pandemic has been presented in the "Intellectual Property Promotion Plan 2021". The need for intellectual property education has thus steadily increased.

2. Selection of venues for demonstration lessons

Two regular schools (accredited super science high schools [SSHs]) and two College and National Institute of Technology were selected with the following points taken into consideration:

- The schools show high interest in innovation and invention-related matters and in intellectual property
- Demonstration lessons would be conducted at schools showing high interest to verify the teaching materials and teaching notes and then improvements would be considered; these lessons would then be extended to general high schools after their utility had been demonstrated.

We submitted requests to three regular high schools (accredited SSHs) in Tokyo, and received consent from Tokai University Takanawadai Senior High School and Tamagawa Academy(K-12) &University.

⁴ Japan Patent Agency (March 2019) "Intellectual Property Education for Enjoyably Creating New Things/Ideas: Lesson Guides for Creating the Future - Examples and Tips for Learning Guidance Applicable Immediately in All Subjects" (https://www.jpo.go.jp/resources/report/sonota/document/zaisanken-seidomondai/2018_05_hint_zentai.pdf)

We also contacted two College and National Institute of Technology -- National Institute of Technology, ICHINOSEKI College and National Institute of Technology, Numazu College, both of which are regular Patent Contest participants – and the two schools agreed to participate.

3. Overview of demonstration lesson venues

(1) Regular high schools (accredited SSHs) *Listed in order of demonstration lesson dates

(i) Tokai University Takanawadai Senior High School (conducted on December 14, 2021)
Accredited since 2004, this SSH's R&D focus is on "the educational pursuit of scientific thinking and an international perspective through co-creation with society". "Education on Respect for Intellectual Property" is conducted every year for first-year students in the "Modern Civilization Theory for High School Students" taught by the head of the Japanese Department.

(ii) Tamagawa Academy(K-12) &University (three-part series: January 11, 18, and 25, 2022)
Accredited since 2008, this SSH's R&D focus is "learning that fosters creativity and critical thinking based on the International Baccalaureate program". The head of the Science Department conducts these lessons; the main endeavors are paper presentations and participation in robotic competitions and other contests, and intellectual property education had not previously been offered.

(2) College and National Institute of Technology *Listed in order of demonstration lesson dates

(i) National Institute of Technology, ICHINOSEKI College (November 17, 2021 (Electrical/Electronic Engineering), December 15 (Mechanical/Intellectual Systems))

This college is a regular award winner in the Patent Contest hosted by several organizations, including Japan Patent Office (JPO), Ministry of Education, Culture, Sports, Science and Technology (MEXT), National Center for Industrial Property Information Training (INPIT). Its intellectual property education requires that first- to third-year students attend presentations on intellectual property and acquire basic knowledge. Based on that foundation, the college conducts systematic intellectual property education, linking it to earning qualifications through the Intellectual Property Management Skills Test and to participating in the Patent

Contest. In addition, the school also co-hosts Patent Contest Summits with local universities and high schools, and extends the reach of intellectual property education in cooperation with the local community.

As a result, fourth-year students in these courses have taken part in the Patent Search Competition student course (sponsored by the Industrial Property Cooperation Center) since AY2020, and 17 students were certified – two with perfect scores – in 2021.

(ii) National Institute of Technology, Numazu College (conducted on December 20, 2021)

This college is a regular award winner in the “Patent Contest” hosted by several organizations, including Japan Patent Office (JPO), Ministry of Education, Culture, Sports, Science and Technology (MEXT), National Center for Industrial Property Information Training (INPIT). Intellectual property education is compulsory from the first year, and is a required subject for first-year to fifth-year students. The school also offers special lectures on topics such as applying for the Patent Contest, and it focuses on intellectual property education using the inventive principles in TRIZ. It is also expanding intellectual property education outside the school to residents of the Numazu area regardless of age in collaborative efforts aimed at boosting the community.

4. Questionnaire surveys of students and interviews with instructors/teachers

(1) Overview of questionnaire surveys

To ascertain the educational effects of teaching materials in demonstration lessons, two questionnaire surveys were conducted on (i) awareness of intellectual property before and after the lessons and (ii) interest in intellectual property stimulated via the teaching materials. The content of the questionnaire was the same for all demonstration verifications.

(i) Awareness of intellectual property before and after lessons

For the awareness survey, a questionnaire survey was conducted once before the class and again after the class with exactly the same questions, in order to measure changes in awareness of intellectual property from the changes in the responses.

The question items used a scale⁵ to measure changes in awareness of intellectual property.

⁵ Hiroyuki Muramatsu, Hye Song, Mamoru Matsuoka, Yoshifumi Nakanishi, Jun Moriyama (2009) “Composition of Awareness Scale for Intellectual Property Study in Technical Education”, *Journal of the Japan Society of Technology*

Four of the five factors on the intellectual property study awareness scale -- F1 (willingness to engage in creative activities), F2 (awareness of the value of sharing ideas), F3 (interest in intellectual property), F4 (respect for intellectual property) – were used to prepare a 19-item questionnaire, with four responses available for each question: 1: Do not agree at all, 2: Do not agree, 3: Somewhat agree, 4: Strongly agree.

(ii) Post-lesson interest in intellectual property stimulated via teaching materials

The following three questions were added as questions to be asked only after class.

Q13 Learning about intellectual property was interesting

Q14 I found intellectual property interesting because it dealt with familiar products

Q15 I would like more time set aside for us to come up with our own ideas

[Survey items]

(i) Awareness of intellectual property before and after lessons

F1 (Willingness to engage in creative activities)

Q01 I enjoy thinking up ideas

Q02 I wonder sometimes if I can come up with better ideas about things around me

Q03 I am interested in the workings of equipment and machinery widely used in my day-to-day life

Q04 I like thinking for myself while making things

F2 (Awareness of the value of sharing ideas)

Q10 I would be pleased if my friends would use my ideas

Q11 I would like to actively incorporate good ideas from my friends

Q12 I think it is good for people to show each other their ideas

F3 (Interest in intellectual property)

Q05 I would like to know more about intellectual property rights*

Q06-1 I am sometimes aware of patent rights and design rights in my day-to-day life

Q06-2 I am sometimes aware of trademark rights in my day-to-day life

Q06-3 I am sometimes aware of copyrights in my day-to-day life.

Q08 I find news about intellectual property rights* interesting

F4 (Respect for intellectual property)

Q07 My day-to-day life would not be disrupted even if intellectual property rights* were not protected

Q09-1 It is important that inventions and designs be protected

Q09-2 It is important that trademark rights be protected

Q09-3 It is important that copyrights be protected

(ii) Post-lesson interest in intellectual property stimulated via teaching materials

Q13 Learning about intellectual property was interesting

Q14 I found intellectual property interesting because it dealt with familiar products

Q15 I would like more time set aside for us to come up with our own ideas

* Intellectual property rights include patent rights, design rights, trademark rights and copyright etc..

(2) Interviews with instructors/teachers

The interview items are as follows:

(i) Teaching materials

- Convenience of teaching materials
- Points that should be improved in teaching materials
- Age groups for which the lectures are appropriate
- Subjects for which the lessons are appropriate

(ii) Teaching notes

- Convenience of teaching notes
- Points that should be improved in teaching notes
- Subjects for which the lessons are appropriate

III. Overview of demonstration lessons

1. Summary of trial lessons

(1) Tokai University Takanawadai Senior High School

Date/time: Tuesday, December 14, 2021, 13:15-15:05 (two 50-minute class time slots)

Participating students: Class of first-year SSH students (44 students)

Person in charge: Daisuke Noguchi (head teacher responsible for all third-year high school students, Japanese Department Head, SSH teacher)

Instructor: Takao Ogiya (Director, Institute of Invention Promotion Association)

Teaching materials: Original resumes and worksheets prepared by instructor making partial use of "How to Explore Ideas" (see attachment)

(2) Tamagawa Academy(K-12) &University

Dates/times: January 11 (Tuesday), 18 (Tuesday), and 25 (Tuesday), 2022, 08:40-09:30 (three 50-minute class time slots)

Participating students: Third-year high school students (approx. 30 students: voluntary lessons, subject to change each day)

Persons in charge: Takanori Yazaki, Wataru Imai (Science Department Head, SSH teacher)

Instructor: Tomoko Watanabe (Visiting Professor, Yokohama National University; Director and Patent Attorney, Tomoko Watanabe International Patent Office)

Teaching materials: Original materials prepared by instructor (with assignments) making partial use of "How to Explore Ideas" (see attachment)

(3) National Institute of Technology, Ichinoseki College

Dates/times: (a) Wednesday, November 17, 2021, 15:10-16:00

(b) Wednesday, December 15, 2021, 15:10-16:00

Participating students: Second-year high school students

① 31 students (Electrical/Electronic Engineering)

② 35 students (Mechanical/Intellectual Systems)

Instructor: Mikio Kaihara (PhD, Engineering; Professor, Department of Future Creative Engineering)

Teaching materials: Original resume prepared by instructor making full use of "How to Explore Ideas" (see attachment)

(4) National Institute of Technology, Numazu College

Date/time: Monday, December 20, 2021, 16: 00-18: 30 (three 50-minute class time slots)

Participating students: Special lessons

Instructor: Takayoshi Otsu (PhD, Engineering; Professor, Department of Electrical and Electronic Engineering)

Teaching materials: Original resume and worksheets prepared by instructor making partial use of "How to Explore Ideas"

2. Effects/results of demonstration lessons

(1) Tokai University Takanawadai Senior High School

(i) Lessons (presentation materials and worksheets attached)

The lessons were conducted in two 50-minute class time slots.

(a) 13:15-14:05: Sustainable creation cycles

What is Society 5.0, overview of imagination and creativity, practice, groupwork ("Spice-it-up Challenge")

(b) 14:15-15:05: Role of industrial property rights system

Understanding of industrial property rights system, group work using worksheets

The lessons incorporated the content of "How to Explore Ideas" while introducing examples tailored to the participating students' interests.

(a) The lessons explained the background leading up to intellectual property rights, including improvements made to existing ideas using the example given in the teaching materials of "spicing up" cup noodles.

(b) Each intellectual property right was explained using Cup Noodle™ analogies, students were urged in a groupwork case study to think for themselves about what, if any, differences exist between Pocky™ and Toppo™ and what intellectual property rights are involved, and the background to protecting intellectual property rights for familiar items was described.

(ii) Interview content

(a) Teaching materials

(Convenience of teaching materials, points where teaching materials should be improved, age groups for which the lectures are appropriate)

• Instructor (Takao Ogiya)

The current teaching materials were created with enrolled high school students as the personas in mind with the aims of fostering their imagination and creativity and deepening their knowledge of intellectual property. Chicken Ramen™ and Cup Noodle™ were presented as the best examples most familiar to students in order to comprehensively and systematically explain Sustainable Creative Thinking and the intellectual property rights system in chronological order; such examples should continue to be included.

High school students are the main target of these teaching materials, but these materials can be made available to other age groups by varying the perspective.

- Teacher (Daisuke Noguchi)

We receive teaching materials sent in from various fields (e.g, voting simulation guides and tax overviews) but these teaching materials were quite interesting because they contained not only an overview of intellectual property rights but also work sections for practical learning. Teaching materials that provide routines are likely to be taught directly by teachers.

- (b) Teaching notes

(Convenience, points that should be improved, subjects for which the lessons are appropriate)

- Instructor (Takao Ogiya)

Since the outlines, structures, target learners, learning objectives and learning points that form the basis of the teaching materials are all clearly laid out, these materials can be used as a guide in conducting lessons for the personas in this instance. If the teaching materials are improved with the addition of case studies and exercises as suggested, the teaching notes will need to be updated together with the teaching materials.

- Teacher (Daisuke Noguchi)

It is important that the teaching notes go into more depth on the content of the teaching materials, and instructions should be given on how to proceed with the work sections.

(c) Lessons

- Instructor (Takao Ogiya)

Since the participants comprise first-year students, we increased the elements of active learning and focused on learning while having fun. As a result, the students took to the subject more actively than we had imagined, and we achieved greater educational effects in fostering imagination than we had expected.

For example, we asked students to come up with three ideas in the “Spice-it-up Challenge”, but some groups decided to narrow these down to a specific theme such as “Hokkaido” in order to choose three ideas all connected to each other or pursued other creative approaches.

In the "Let's Find the Differences between Pocky™ and Toppo™" exercise, I felt the students were strongly motivated to learn more, e.g., they noted the difference in labeling between "chocolate" and "mixed chocolate" and sought on the spot to search out and understand the difference in meaning between the two terms.

- Teacher (Daisuke Noguchi)

In Modern Civilization Theory, I had given an overview of intellectual property rights during an online lesson, but I discovered this time that I was able to conduct a two-way lesson on intellectual property rights, an experience that I can put to use in future lessons. Familiar case studies were used in the individual work and group work sections, and it was very helpful to see students thinking about such matters as personal concerns to derive the answers. Although the lessons included videos and work sections, the time allocation was solid. It was impressive how students' initial view of intellectual property rights as a boring topic (prompting considerable negativity) was overcome by the positive and forward-looking lessons in which the students showed each other respect. First-year students were a good choice for starting out learning on intellectual property in lessons. I felt the lessons would have been even better if more material on copyrights had been covered.

• Students

- ✧ Although they did understand rights by name, it was good that they were able to learn from familiar examples what intellectual property rights are and what is being protected.
- ✧ In the case studies of instant noodles and Cup Noodle™, they learned that intellectual property can also be created by adding “a dash” of improvement.

Scenes from the classroom



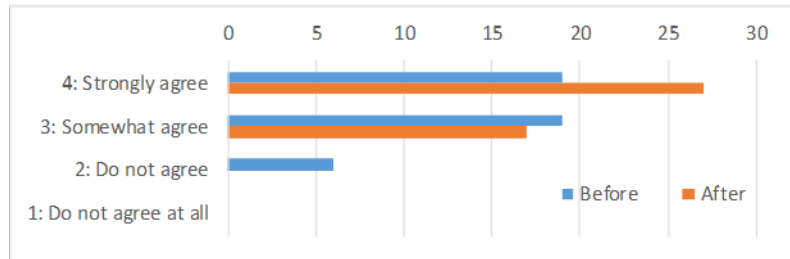
(iii) Questionnaire survey results

(a) Pre- and post-lesson intellectual property awareness surveys

F1: Willingness to engage in creative activities

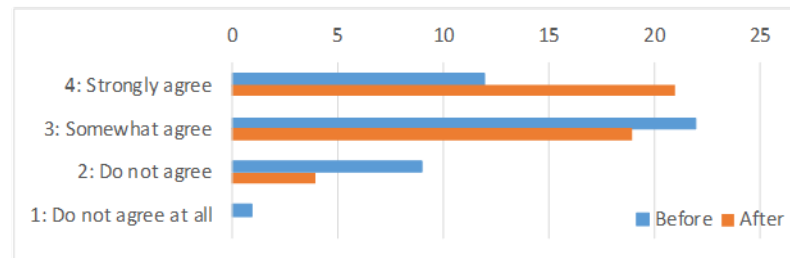
Q01 I enjoy thinking up ideas

Survey items	Before	After
4: Strongly agree	19	27
3: Somewhat agree	19	17
2: Do not agree	6	0
1: Do not agree at all	0	0



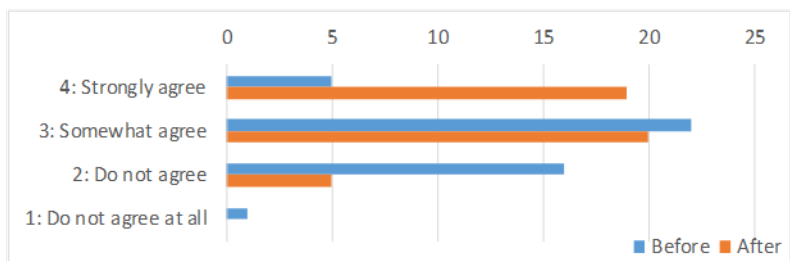
Q02 I wonder sometimes if I can come up with better ideas about things around me

Survey items	Before	After
4: Strongly agree	12	21
3: Somewhat agree	22	19
2: Do not agree	9	4
1: Do not agree at all	1	0



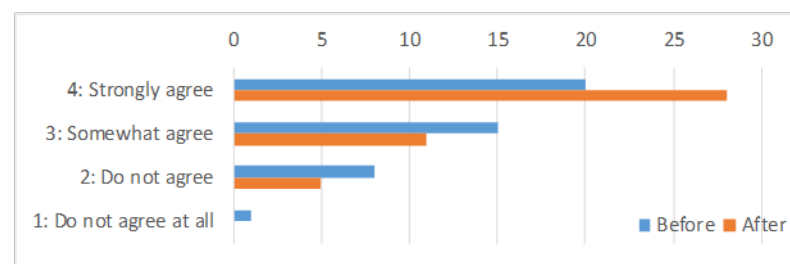
Q03 I am interested in the workings of equipment and machinery widely used in my day-to-day life

Survey items	Before	After
4: Strongly agree	5	19
3: Somewhat agree	22	20
2: Do not agree	16	5
1: Do not agree at all	1	0



Q04 I like thinking for myself while making things

Survey items	Before	After
4: Strongly agree	20	28
3: Somewhat agree	15	11
2: Do not agree	8	5
1: Do not agree at all	1	0



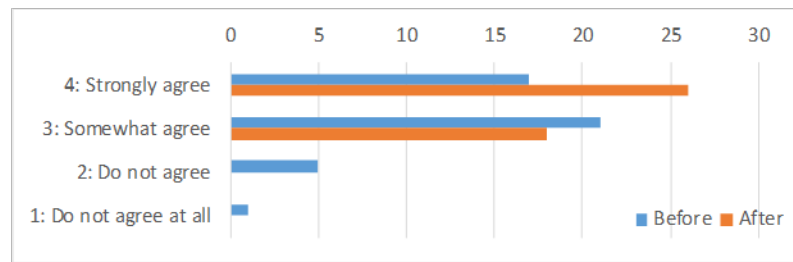
(Discussion)

The responses in the post-lesson survey showed an increased number of students willing to take part in creative activities. Overall, it appears that potential motivation already existed.

F2: Awareness of the value of sharing ideas

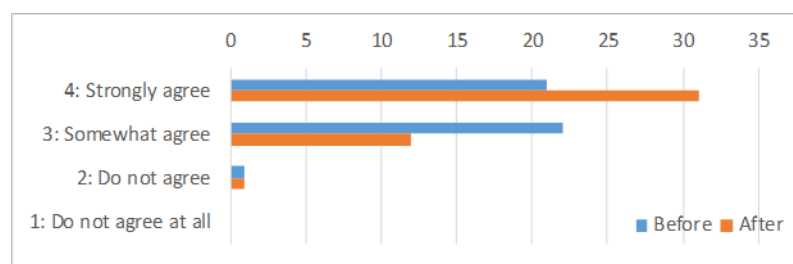
Q10 I would be pleased if my friends would use my ideas

Survey items	Before	After
4: Strongly agree	17	26
3: Somewhat agree	21	18
2: Do not agree	5	0
1: Do not agree at all	1	0



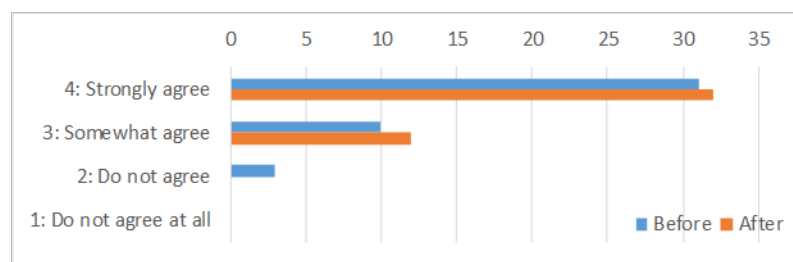
Q11 I would like to actively incorporate good ideas from my friends

Survey items	Before	After
4: Strongly agree	21	31
3: Somewhat agree	22	12
2: Do not agree	1	1
1: Do not agree at all	0	0



Q12 I think it is good for people to show each other their ideas

Survey items	Before	After
4: Strongly agree	31	32
3: Somewhat agree	10	12
2: Do not agree	3	0
1: Do not agree at all	0	0



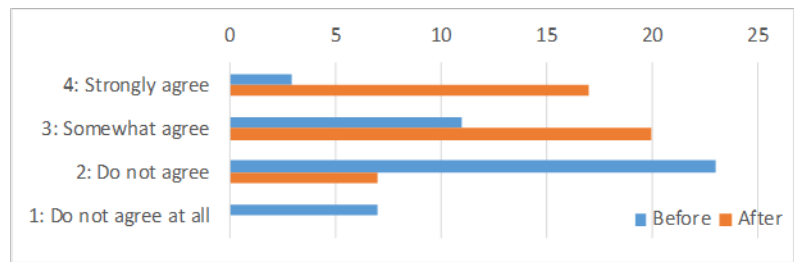
(Discussion)

It seems that awareness of the value of sharing ideas rose, perhaps because there had been no opportunities to share ideas.

F3: Interest in intellectual property

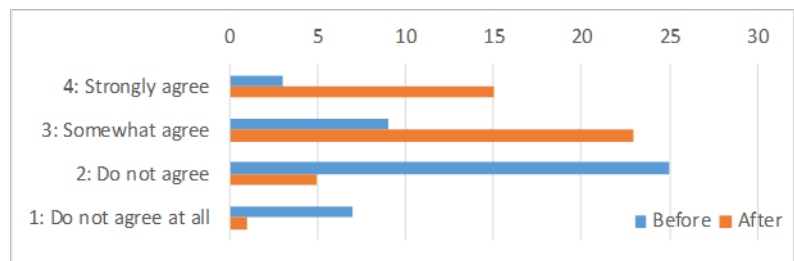
Q05 I would like to know more about intellectual property rights*

Survey items	Before	After
4: Strongly agree	3	17
3: Somewhat agree	11	20
2: Do not agree	23	7
1: Do not agree at all	7	0



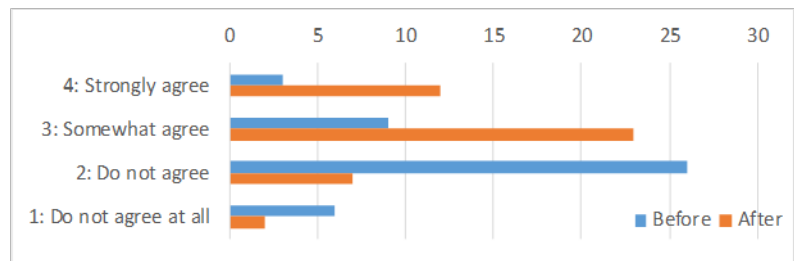
Q06-1 I am sometimes aware of patent rights and design rights in my day-to-day life

Survey items	Before	After
4: Strongly agree	3	15
3: Somewhat agree	9	23
2: Do not agree	25	5
1: Do not agree at all	7	1



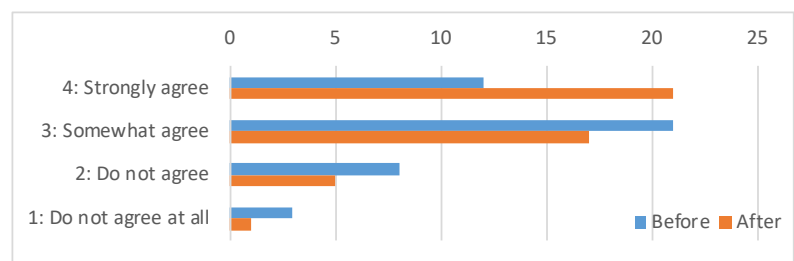
Q06-2 I am sometimes aware of trademark rights in my day-to-day life

Survey items	Before	After
4: Strongly agree	3	12
3: Somewhat agree	9	23
2: Do not agree	26	7
1: Do not agree at all	6	2



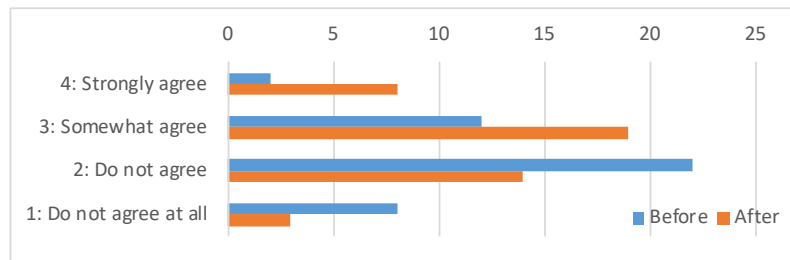
Q06-3 I am sometimes aware of copyrights in my day-to-day life

Survey items	Before	After
4: Strongly agree	12	21
3: Somewhat agree	21	17
2: Do not agree	8	5
1: Do not agree at all	3	1



Q08 I find news about intellectual property rights* interesting

Survey items	Before	After
4: Strongly agree	2	8
3: Somewhat agree	12	19
2: Do not agree	22	14
1: Do not agree at all	8	3



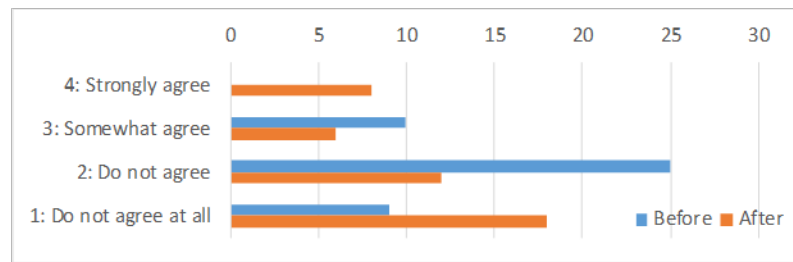
(Discussion)

With respect to “interest in intellectual property”, many students knew the names of rights but no details about these rights, and it appears that students had a deeper understanding of, and greater interest in, the specifics of rights after the lesson than before.

F4: Respect for intellectual property

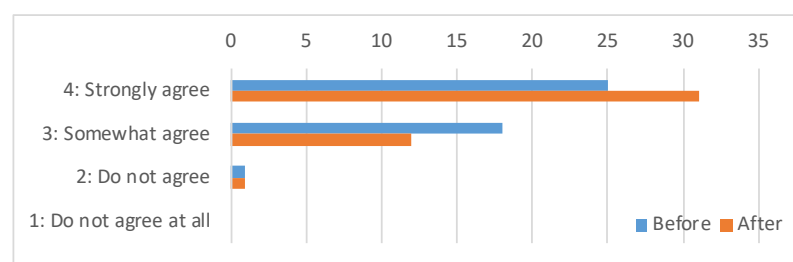
Q07 My day-to-day life would not be disrupted even if intellectual property rights* were not protected

Survey items	Before	After
4: Strongly agree	0	8
3: Somewhat agree	10	6
2: Do not agree	25	12
1: Do not agree at all	9	18



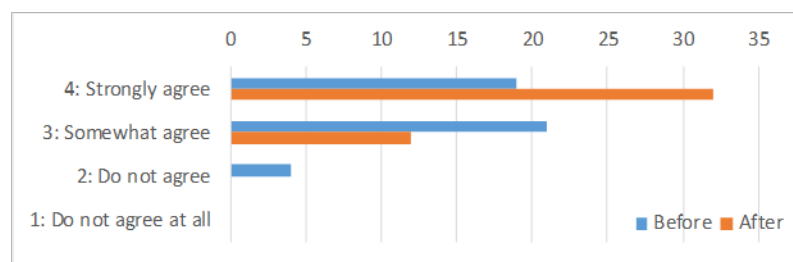
Q09-1 It is important that inventions and designs be protected

Survey items	Before	After
4: Strongly agree	25	31
3: Somewhat agree	18	12
2: Do not agree	1	1
1: Do not agree at all	0	0



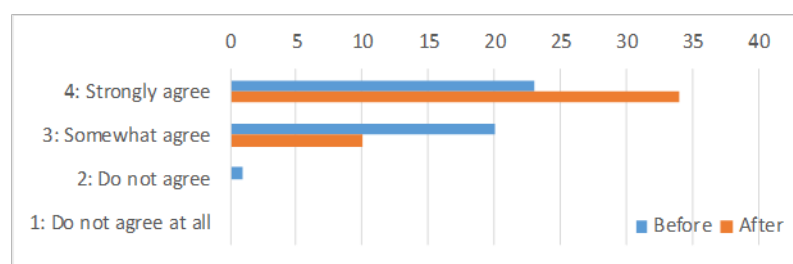
Q09-2 It is important that trademark rights be protected

Survey items	Before	After
4: Strongly agree	19	32
3: Somewhat agree	21	12
2: Do not agree	4	0
1: Do not agree at all	0	0



Q09-3 It is important that copyrights be protected

Survey items	Before	After
4: Strongly agree	23	34
3: Somewhat agree	20	10
2: Do not agree	1	0
1: Do not agree at all	0	0



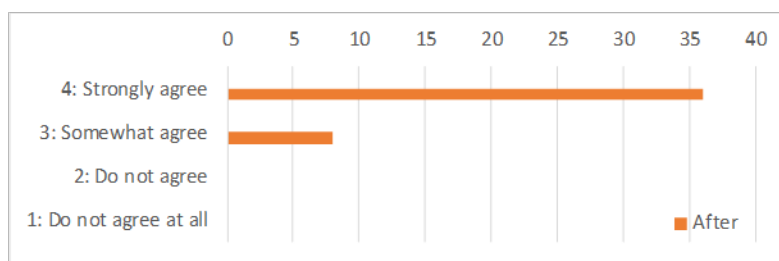
(Discussion)

Since students had no understanding of what kinds of rights exist, a lack of understanding of why these rights should be respected was apparent in the pre-lesson survey, while the post-lesson survey indicated a deeper understanding of the importance of protecting intellectual property.

(b) Post-lesson interest in intellectual property stimulated via teaching materials

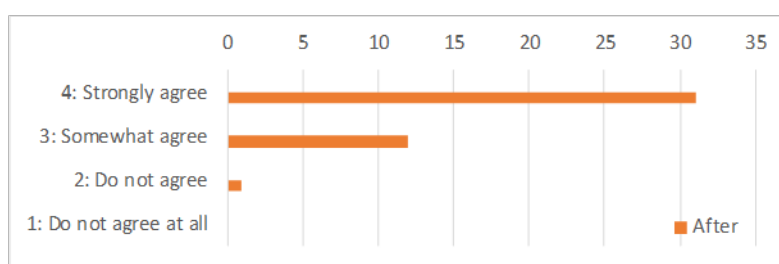
Q13 Learning about intellectual property was interesting

Survey items	Before	After
4: Strongly agree	-	36
3: Somewhat agree	-	8
2: Do not agree	-	0
1: Do not agree at all	-	0



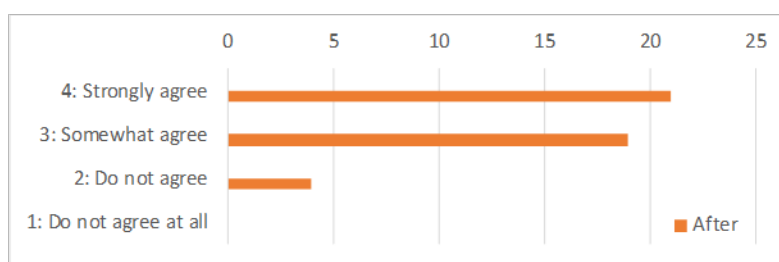
Q14 I found intellectual property interesting because it dealt with familiar products

Survey items	Before	After
4: Strongly agree	-	31
3: Somewhat agree	-	12
2: Do not agree	-	1
1: Do not agree at all	-	0



Q15 I would like more time set aside for us to come up with our own ideas

Survey items	Before	After
4: Strongly agree	-	21
3: Somewhat agree	-	19
2: Do not agree	-	4
1: Do not agree at all	-	0



(Discussion)

The questionnaire results show that the demonstration lessons were useful in sparking interest in intellectual property. None of the students offered “1: Do not agree at all” as a response to any of the questions, showing that their understanding of intellectual property rights had been increased by this project.

(2) Tamagawa Academy(K-12) &University

(i) Lessons (presentation materials and worksheets attached)

The lessons were held over a period of 3 weeks in one 50-minute class time slot.

(a) January 11 (Tuesday) 8: 40-9: 30: Overview of intellectual property rights

"Copyright," "patent," "design," and "trademark" were explained with examples from "How to Explore Ideas" and other cases familiar to students.

Worksheets were distributed, group work conducted via exercises in finding intellectual property rights, and presentations made.

Exercise A: Chocolate balls, Exercise B: Toys, Exercise C: Uniqlo-related

Group homework to be presented at the next lesson: take photos of familiar things and find actual (or possible) intellectual property rights therein (deadline: Friday, January 14)

(b) January 18 (Tuesday) 8:40-9: 30: Creative thinking challenge

Each group offered a presentation on the homework in (i), enabling students to confirm that familiar things are protected by many intellectual property rights. As the next step, explanations were offered on what creative thinking is and what connections exist between creative thinking and intellectual property.

Homework to be presented during the next lesson (group work): decide on problematic issues in school life (on campus), think about ideas to solve them (concrete applications and products), make proposals, and extract intellectual property rights that might arise therefrom. Prepare and submit data for presenting these during the next lesson (deadline: Friday, January 21).

(c) January 25 (Tuesday) 8: 40-9: 30

Each group gave a presentation on the homework in (ii). Ms. Watanabe offered commentary on the presented content and the results extracted from the survey (conducted pre-lesson). In the end, all participants, including the instructor, voted to determine and applaud the group suggesting the best idea.

(ii) Interview content

(a) Teaching materials

(Convenience of teaching materials, points where teaching materials should be improved, age groups for which the lectures are appropriate)

- Instructor (Tomoko Watanabe)

The examples of Chicken Ramen™ and Cup Noodle™ are familiar to everyone, so they are easy to introduce. The content is easy to understand even for high school students and, depending on how they are arranged, the teaching materials can be used by both junior high school students and working adults. These are good teaching materials for introducing intellectual property rights and creative thinking. As points requiring improvements, many students think of solutions using applications and big data that utilize the Internet and SNS to solve problems. When addressing creative thinking, examples besides manufacturing should also be introduced for reference, as was done this time.

- Teachers (Takanori Yazaki, Wataru Imai)

The cases of Chicken Ramen™ and Cup Noodle™ are easy to understand, and the inclusion of exercises in the teaching materials is very useful for instructors. We cannot think of anything at the moment that needs to be improved, but we may discover something once we actually try teaching the lessons. The topics covered in the teaching materials can be used by students from junior high school to university. We would like to see if we can put them to use ourselves based on these lessons.

(b) Teaching notes

(Convenience, points that should be improved, subjects for which the lessons are appropriate)

- Instructor (Tomoko Watanabe)

The teaching materials themselves are very convenient and, at the same time, the teaching notes describe learning goals and issues to enhance convenience, making it easy for instructors to freely put together lessons based on the teaching notes. If any improvements are to be made, it might be good to present examples of topic-specific lessons and lesson plans for differing numbers of class time slots. As for the subjects for which these lessons are appropriate, intellectual property rights are applicable to all subjects, so these lessons could be conducted in any subject by changing the perspective.

(c) Lessons

- Instructor (Tomoko Watanabe)

Thanks to the fact that these lessons were conducted over three 50-minute class time slots, one per week, we were able to achieve the final goal of having students offer presentations, and it was great that we were able to raise awareness of intellectual property rights among students for more than 150 minutes, inclusive of the lessons.

The further along we went through the lessons, from the first to the second to the third, the greater interest students seemed to have in intellectual property rights, and the presentations by the students were wonderful.

With only one class time slot of 50 minutes, we can only give a one-way overview of intellectual property rights, so it would be good to arrange for more time. We can introduce group work if we can secure at least two class time slots and, with a third slot, we can have students prepare presentation materials as we did this time. I look forward to witnessing student growth in future.

- Teachers (Takanori Yazaki, Wataru Imai)

These were voluntary lessons for students who have decided on their paths after graduating from high school, and I am thankful that the excellent trial lessons let students undertake homework positively and deepen their knowledge of intellectual property with each lesson.

I would like to learn interactive methods of conducting lessons and utilize them in future lessons. Our school also wants to pursue cross-subject lessons, and we expect that the topic of intellectual property rights can be utilized for this purpose. I have been focusing heretofore on applying for contests and presenting papers, but I would like to incorporate creative thinking and other aspects into my day-to-day lessons. Although we have an integrated school that runs from elementary school to university, business administration is the key focus, so it was significant that students were able to learn about the intellectual property rights necessary for management. I would like to continue informing students about intellectual property rights.

• Students

- ◇ I only learned about the law in my information science class, and this lesson helped me understand intellectual property rights with familiar examples.
- ◇ I discovered that there are many intellectual property rights all around me.
- ◇ I am glad that I learned the knowledge necessary to become a full-fledged member of society.
- ◇ I finally understood the meaning behind the comment "I don't like arranging" made by the composer for Dragon Quest.
- ◇ I gained new knowledge in discovering that familiar things are protected by rights.
- ◇ We bounced ideas off each other in group work and I became more open-minded.
- ◇ I found out that being able to acquire intellectual property rights protects intellectual property from being misused and engenders credibility.

Scenes from the classroom





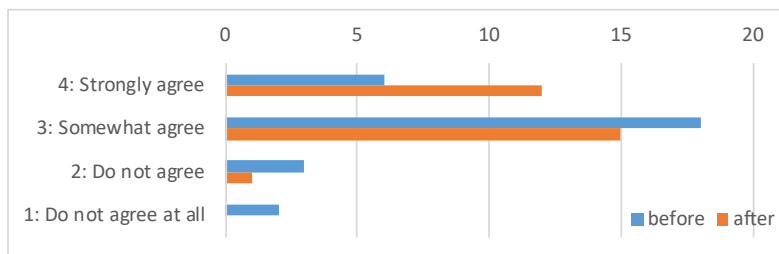
(iii) Questionnaire survey results

(a) Pre- and post-lesson awareness surveys on intellectual property

F1: Willingness to engage in creative activities

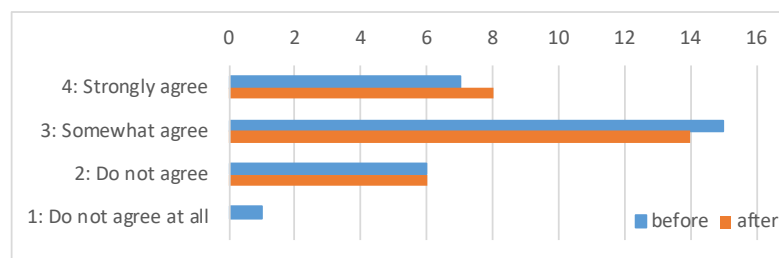
Q01 I enjoy thinking up ideas

Survey items	before	after
4: Strongly agree	6	12
3: Somewhat agree	18	15
2: Do not agree	3	1
1: Do not agree at all	2	0



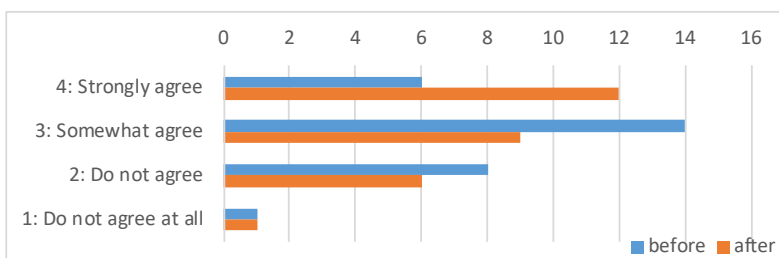
Q02 I wonder sometimes if I can come up with better ideas about things around me

Survey items	before	after
4: Strongly agree	7	8
3: Somewhat agree	15	14
2: Do not agree	6	6
1: Do not agree at all	1	0



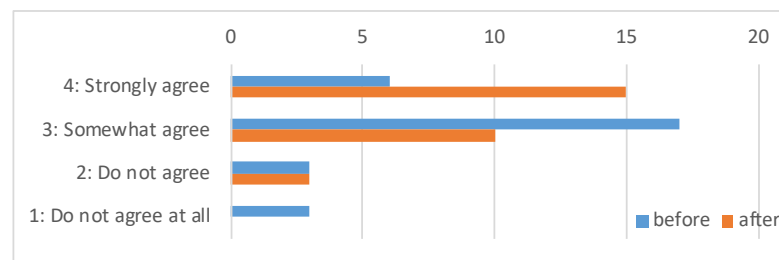
Q03 I am interested in the workings of equipment and machinery widely used in my day-to-day life

Survey items	before	after
4: Strongly agree	6	12
3: Somewhat agree	14	9
2: Do not agree	8	6
1: Do not agree at all	1	1



Q04 I like thinking for myself while making things

Survey items	before	after
4: Strongly agree	6	15
3: Somewhat agree	17	10
2: Do not agree	3	3
1: Do not agree at all	3	0



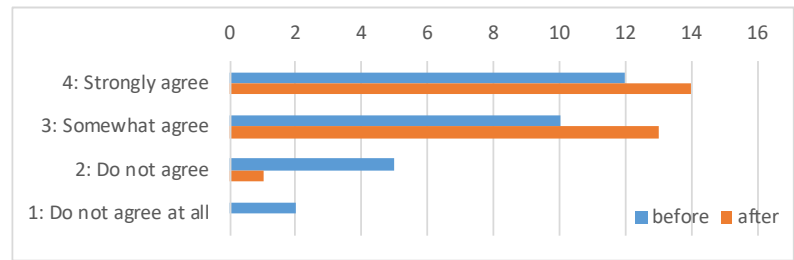
(Discussion)

It is apparent from the post-lesson survey that the number of students more willing to engage in creative activities had increased. Overall, it appears that potential motivation already existed.

F2: Awareness of the value of sharing ideas

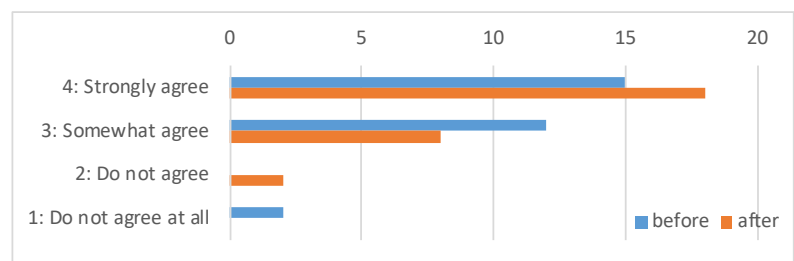
Q10 I would be pleased if my friends would use my ideas

Survey items	before	after
4: Strongly agree	12	14
3: Somewhat agree	10	13
2: Do not agree	5	1
1: Do not agree at all	2	0



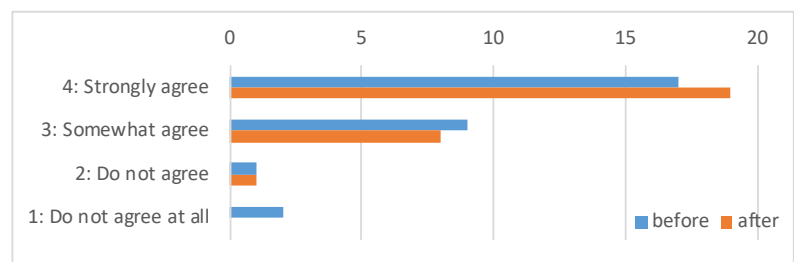
Q11 I would like to actively incorporate good ideas from my friends

Survey items	before	after
4: Strongly agree	15	18
3: Somewhat agree	12	8
2: Do not agree	0	2
1: Do not agree at all	2	0



Q12 I think it is good for people to show each other their ideas

Survey items	before	after
4: Strongly agree	17	19
3: Somewhat agree	9	8
2: Do not agree	1	1
1: Do not agree at all	2	0



(Discussion)

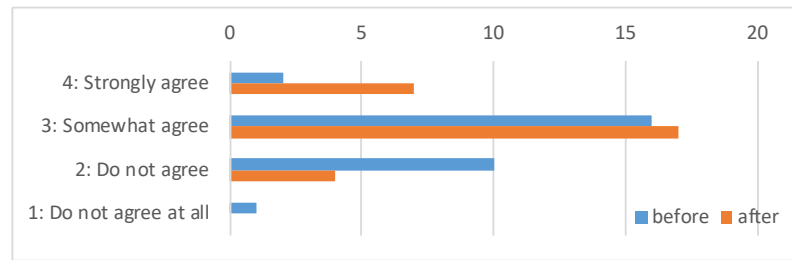
It appears that awareness of the value of sharing ideas increased, perhaps because there had been no opportunities to share ideas.

Although there were students who had no awareness whatsoever of the value of sharing ideas, the importance of sharing ideas was conveyed in the course of conducting the lessons, and a shift towards responses more positive than "2: Do not agree" seems to indicate heightened awareness.

F3: Interest in intellectual property

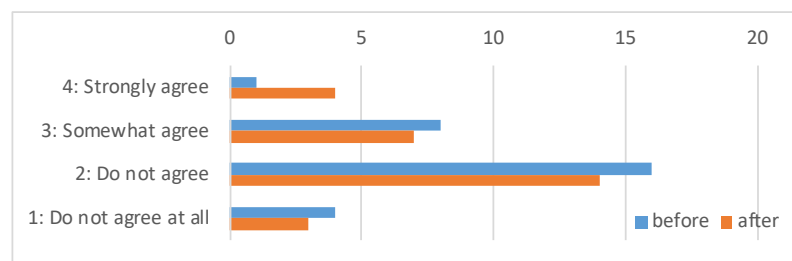
Q05 I would like to know more about intellectual property rights*

Survey items	before	after
4: Strongly agree	2	7
3: Somewhat agree	16	17
2: Do not agree	10	4
1: Do not agree at all	1	0



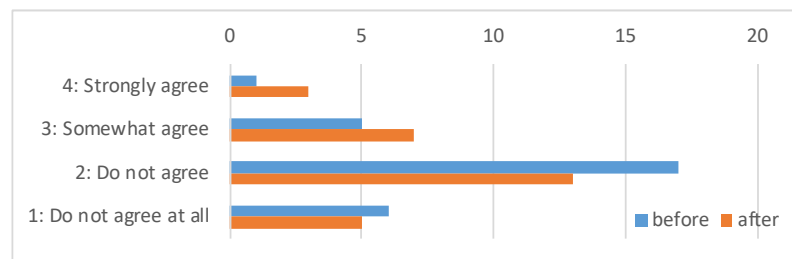
Q06-1 I am sometimes aware of patent rights and design rights in my day-to-day life

Survey items	before	after
4: Strongly agree	1	4
3: Somewhat agree	8	7
2: Do not agree	16	14
1: Do not agree at all	4	3



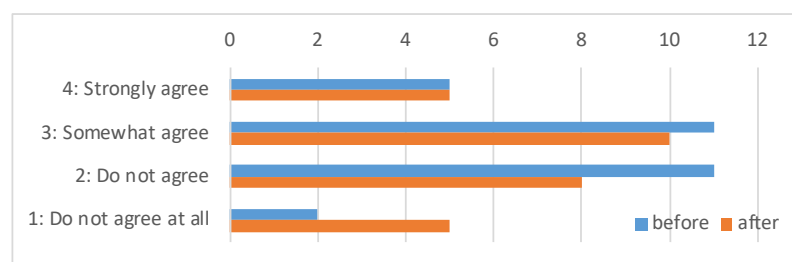
Q06-2 I am sometimes aware of trademark rights in my day-to-day life

Survey items	before	after
4: Strongly agree	1	3
3: Somewhat agree	5	7
2: Do not agree	17	13
1: Do not agree at all	6	5



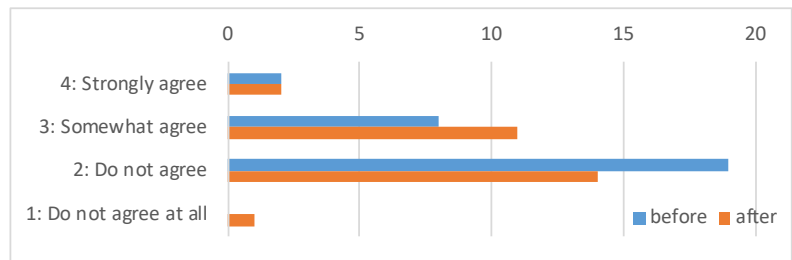
Q06-3 I am sometimes aware of copyrights in my day-to-day life

Survey items	before	after
4: Strongly agree	5	5
3: Somewhat agree	11	10
2: Do not agree	11	8
1: Do not agree at all	2	5



Q08 I find news about intellectual property rights* interesting

Survey items	before	after
4: Strongly agree	2	2
3: Somewhat agree	8	11
2: Do not agree	19	14
1: Do not agree at all	0	1



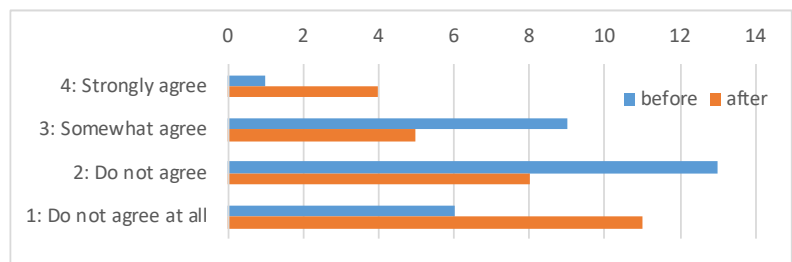
(Discussion)

As for "interest in intellectual property," many students knew the name of rights but no details about them, and it is apparent that both understanding of and interest in these details increased over the course of the lessons. The high level of interest shown in intellectual property in general rather than specific rights is likely attributable to the comprehensive explanation offered by Ms. Watanabe in teaching the lesson.

F4: Respect for intellectual property

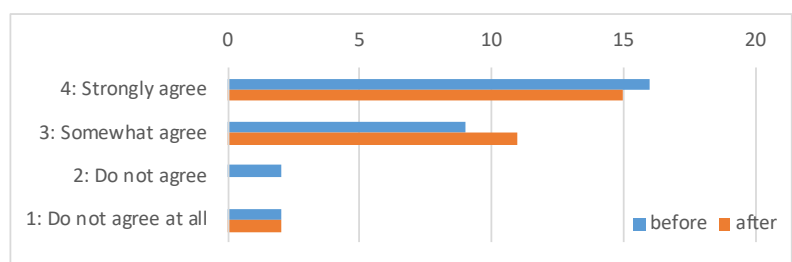
Q07 My day-to-day life would not be disrupted even if intellectual property rights* were not protected

Survey items	before	after
4: Strongly agree	1	4
3: Somewhat agree	9	5
2: Do not agree	13	8
1: Do not agree at all	6	11



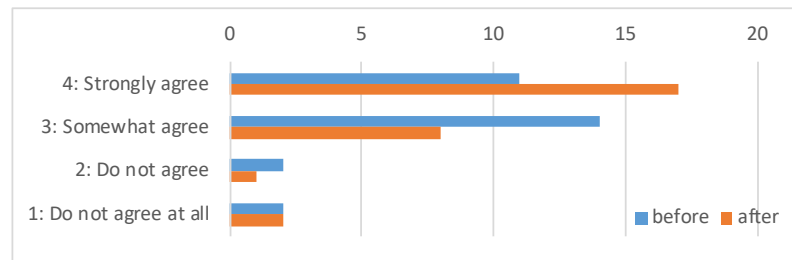
Q09-1 It is important that inventions and designs be protected

Survey items	before	after
4: Strongly agree	16	15
3: Somewhat agree	9	11
2: Do not agree	2	0
1: Do not agree at all	2	2



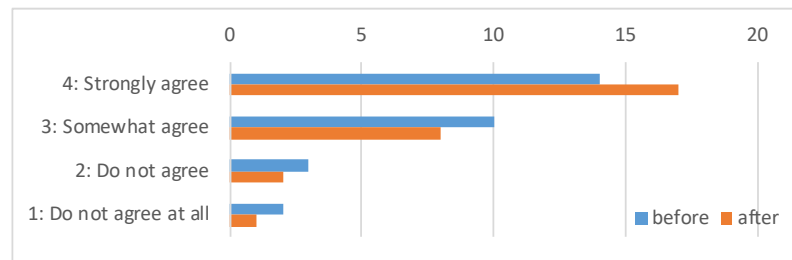
Q09-2 It is important that trademark rights be protected

Survey items	before	after
4: Strongly agree	11	17
3: Somewhat agree	14	8
2: Do not agree	2	1
1: Do not agree at all	2	2



Q09-3 It is important that copyrights be protected

Survey items	before	after
4: Strongly agree	14	17
3: Somewhat agree	10	8
2: Do not agree	3	2
1: Do not agree at all	2	1



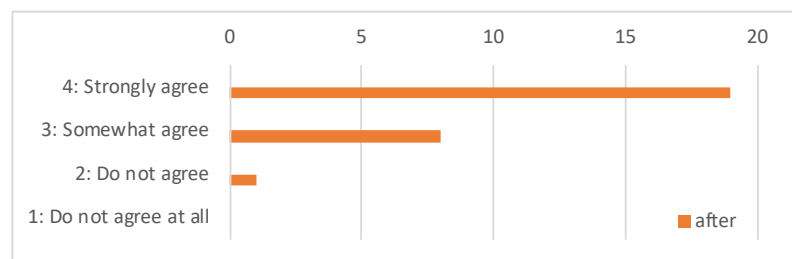
(Discussion)

Regarding the protection of intellectual property rights, a conscious recognition of these rights as important can be seen in the results of the pre-lesson survey, but the post-lesson survey results show greater understanding of the importance of protecting intellectual property, especially trademark rights.

(b) Post-lesson interest in intellectual property stimulated by teaching materials

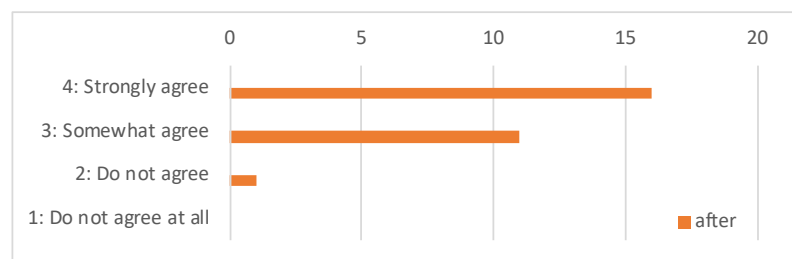
Q13 Learning about intellectual property was interesting

Survey items	before	after
4: Strongly agree	-	19
3: Somewhat agree	-	8
2: Do not agree	-	1
1: Do not agree at all	-	0



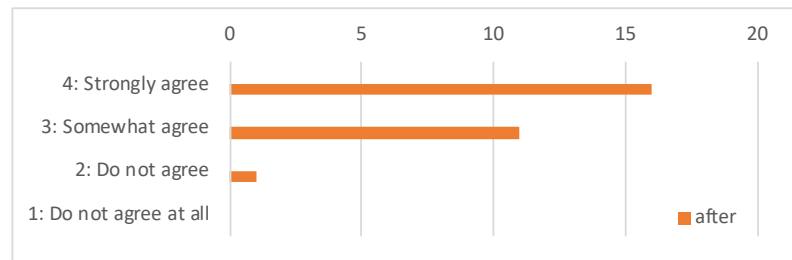
Q14 I found intellectual property interesting because it dealt with familiar products

Survey items	before	after
4: Strongly agree	-	16
3: Somewhat agree	-	11
2: Do not agree	-	1
1: Do not agree at all	-	0



Q15 I would like more time set aside for us to come up with our own ideas

Survey items	before	after
4: Strongly agree	-	16
3: Somewhat agree	-	11
2: Do not agree	-	1
1: Do not agree at all	-	0



(Discussion)

The questionnaire results show that the demonstration lesson was useful in prompting interest in intellectual property. In particular, there were no “1: Do not agree at all” responses for any of the questions, so this project deepened students’ understanding of intellectual property rights.

(3) National Institute of Technology, ICHINOSEKI College

(i) Lesson (attached presentation materials)

A lesson was conducted in a single 50-minute class time slot.

A two-way lesson used “How to Explore Ideas” to present the history of the introduction of instant noodles to Momofuku Ando's Chicken Ramen™ to Cup Noodle™ one PowerPoint slide at a time in a quiz format to determine what corresponds to intellectual property rights. Work sections were also included that had individual students think and speak about the types of instant food they would make, the difficulties they face in their day-to-day life, and any things they might wish were available.

(ii) Interview content

(a) Teaching materials

(Convenience of teaching materials, points where teaching materials should be improved, age groups for which the lectures are appropriate)

• Instructor (Mikio Kaihara)

I prepared PowerPoint materials using excerpts from the teaching materials and conducted a two-way lesson with questions and answers on each slide. Given the background of our times, it is hard to imagine what it would be like to wait in line for noodles. However, the work section made the materials very easy to use. One issue is the fact that our times have become too prosperous, making it difficult to find problems, and it might be better to incorporate more current-day examples to make them easier to find. The teaching materials are designed to be used in developing countries as well as in Japan, and they are appropriate for high school and university students.

(b) Teaching notes

(Convenience, points that should be improved, subjects for which the lessons are appropriate)

• Instructor (Mikio Kaihara)

The outline is solid, so I do not feel there are any particular updates needed on learning points. However, it would be even better if the lessons did not conclude with the learning goals but instead the Patent Contest and other future matters were added to take the lessons beyond the teaching materials. As for the subjects for which the materials are

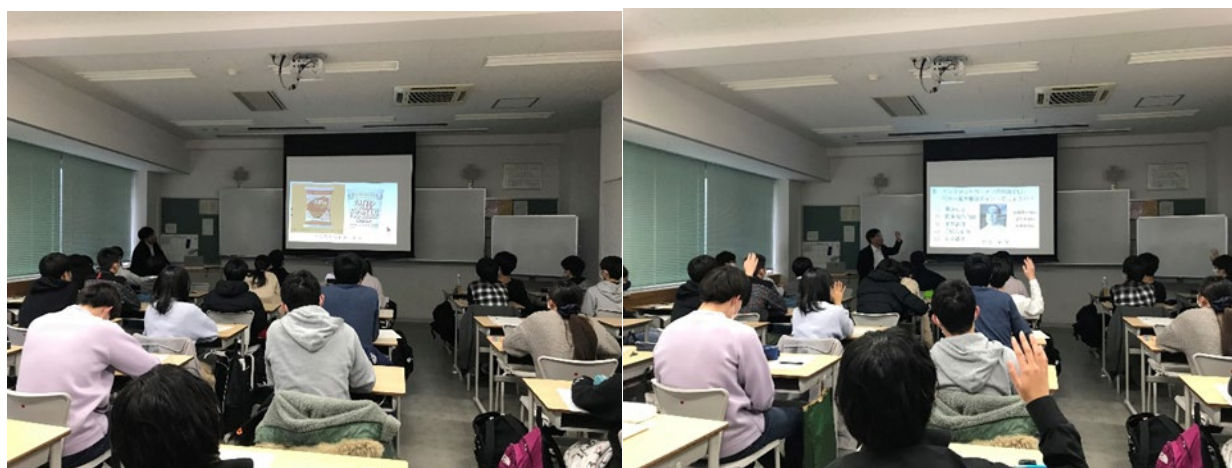
appropriate, our school already has an intellectual property rights curriculum. While we do collaborate in events such as the Patent Contest Summit to broaden knowledge of intellectual property rights in our community, there are presently few teachers responsible for intellectual property education. Furthermore, I think it would be useful to design a system in which we could have teachers from the English, mathematics, Japanese and other departments could conduct model lessons using these teaching notes and introduce these lessons. One of the major purposes of education on intellectual property creation is to foster creativity, and lessons that foster creativity can be developed for any subject (general-purpose education on intellectual property creation).

(c) Lessons

- Instructor (Mikio Kaihara)

I have been in charge of intellectual property lessons for first-year students in the specialized course and fifth-year students in the regular course. The intellectual property lessons for first-year students cover copyrights, but this time I used the familiar examples of instant noodles and Cup Noodle™ as lesson topics while going into more depth in the second year of the main course, so images easily sprung to mind for students. They likely feel pride in this Japanese product that people around the world are fond of as an emergency food for disasters. The students also responded well to questions.

Scenes from the classroom



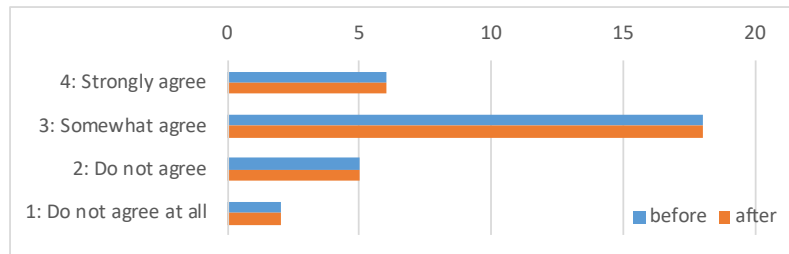
(iii) Questionnaire results ((blue): Electrical/Electronic Engineering, (green): Mechanical/Intellectual Systems)

(a) Pre- and post-lesson awareness surveys on intellectual property

F1: Willingness to engage in creative activities

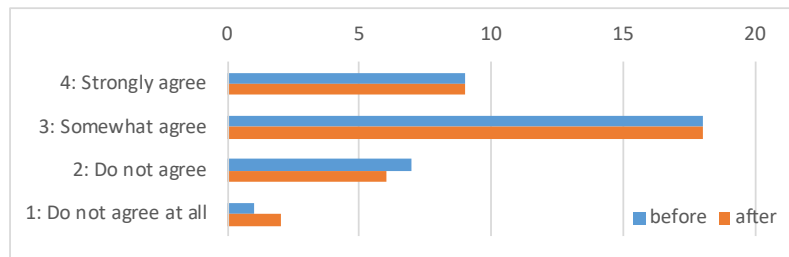
Q01 I enjoy thinking up ideas

Survey items	before	after
4: Strongly agree	6	6
3: Somewhat agree	18	18
2: Do not agree	5	5
1: Do not agree at all	2	2



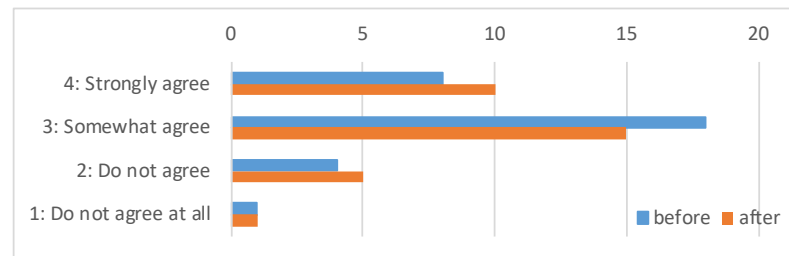
Q01 I enjoy thinking up ideas

Survey items	before	after
4: Strongly agree	9	9
3: Somewhat agree	18	18
2: Do not agree	7	6
1: Do not agree at all	1	2



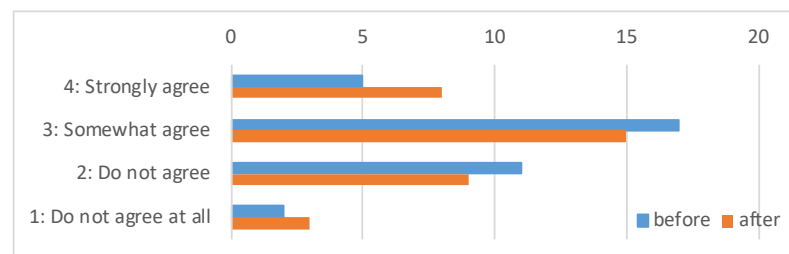
Q02 I wonder sometimes if I can come up with better ideas about things around me

Survey items	before	after
4: Strongly agree	8	10
3: Somewhat agree	18	15
2: Do not agree	4	5
1: Do not agree at all	1	1



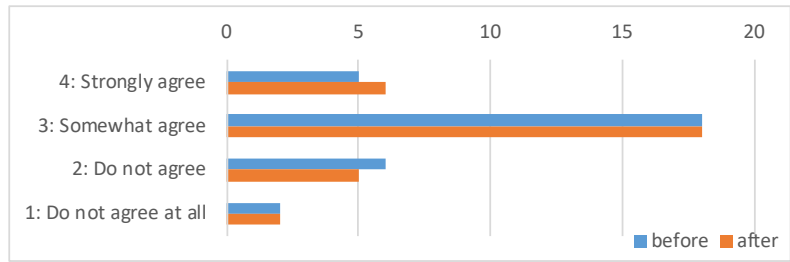
Q02 I wonder sometimes if I can come up with better ideas about things around me

Survey items	before	after
4: Strongly agree	5	8
3: Somewhat agree	17	15
2: Do not agree	11	9
1: Do not agree at all	2	3



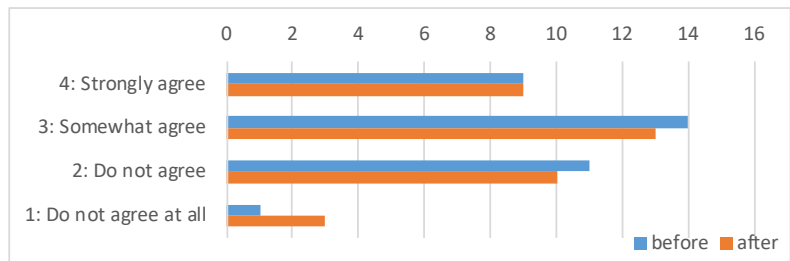
Q03 I am interested in the workings of equipment and machinery widely used in my day-to-day life

Survey items	before	after
4: Strongly agree	5	6
3: Somewhat agree	18	18
2: Do not agree	6	5
1: Do not agree at all	2	2



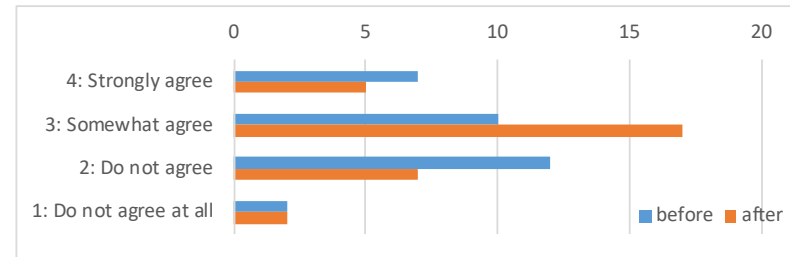
Q03 I am interested in the workings of equipment and machinery widely used in my day-to-day life

Survey items	before	after
4: Strongly agree	9	9
3: Somewhat agree	14	13
2: Do not agree	11	10
1: Do not agree at all	1	3



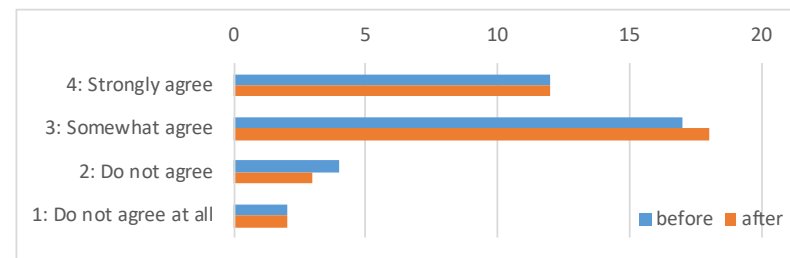
Q04 I like thinking for myself while making things

Survey items	before	after
4: Strongly agree	7	5
3: Somewhat agree	10	17
2: Do not agree	12	7
1: Do not agree at all	2	2



Q04 I like thinking for myself while making things

Survey items	before	after
4: Strongly agree	12	12
3: Somewhat agree	17	18
2: Do not agree	4	3
1: Do not agree at all	2	2



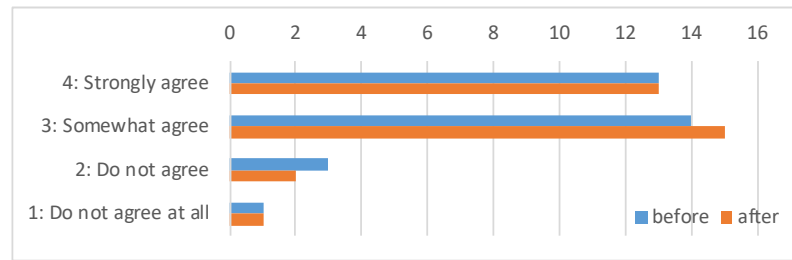
(Discussion)

Since students understood intellectual property rights from regular lessons and engage in practical lessons in the course of regular lessons, there was not much change in the willingness to take part in creative activities between the pre-lesson and post-lesson surveys.

F2: Awareness of the value of sharing ideas

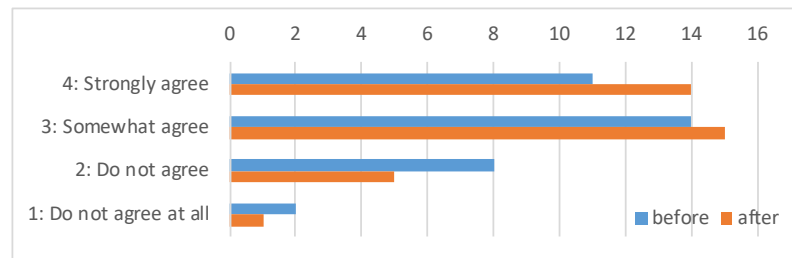
Q10 I would be pleased if my friends would use my ideas

Survey items	before	after
4: Strongly agree	13	13
3: Somewhat agree	14	15
2: Do not agree	3	2
1: Do not agree at all	1	1



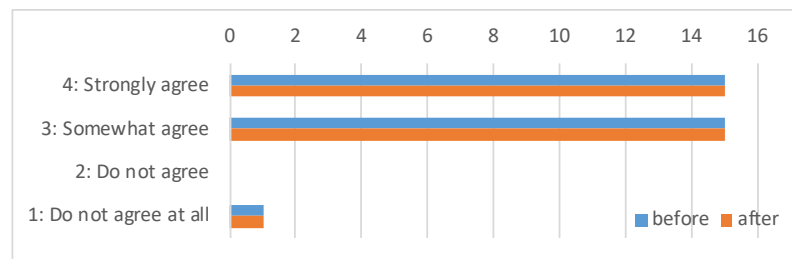
Q10 I would be pleased if my friends would use my ideas

Survey items	before	after
4: Strongly agree	11	14
3: Somewhat agree	14	15
2: Do not agree	8	5
1: Do not agree at all	2	1



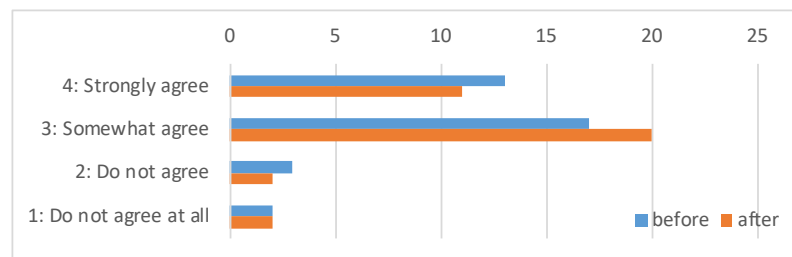
Q11 I would like to actively incorporate good ideas from my friends

Survey items	before	after
4: Strongly agree	15	15
3: Somewhat agree	15	15
2: Do not agree	0	0
1: Do not agree at all	1	1



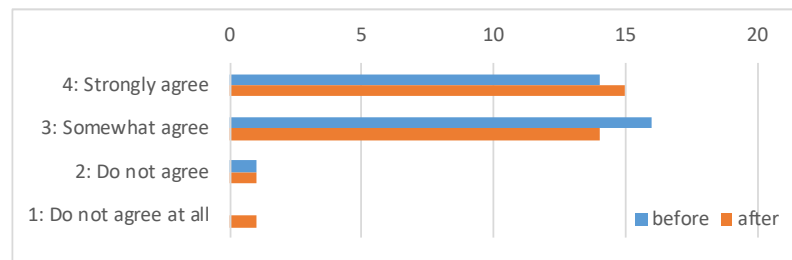
Q11 I would like to actively incorporate good ideas from my friends

Survey items	before	after
4: Strongly agree	13	11
3: Somewhat agree	17	20
2: Do not agree	3	2
1: Do not agree at all	2	2



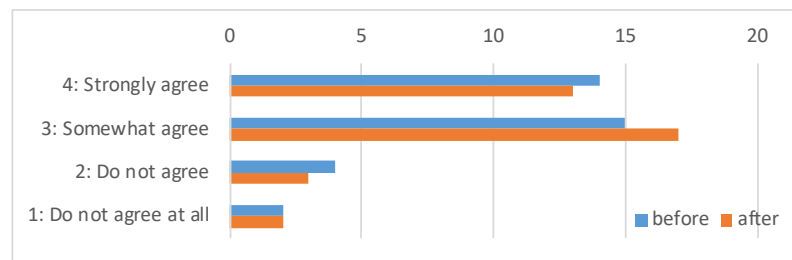
Q12 I think it is good for people to show each other their ideas

Survey items	before	after
4: Strongly agree	14	15
3: Somewhat agree	16	14
2: Do not agree	1	1
1: Do not agree at all	0	1



Q12 I think it is good for people to show each other their ideas

Survey items	before	after
4: Strongly agree	14	13
3: Somewhat agree	15	17
2: Do not agree	4	3
1: Do not agree at all	2	2



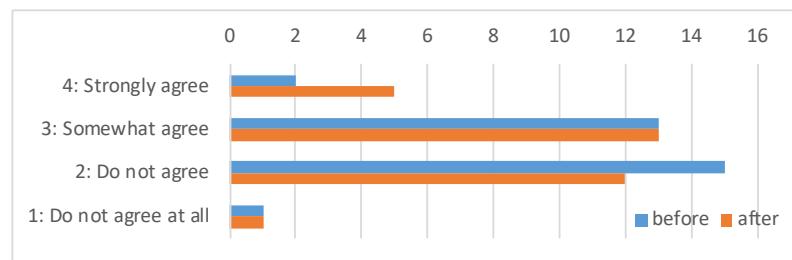
(Discussion)

Perhaps because applications to patent contests and presentations at academic conferences are routine, awareness of the value of sharing ideas is an everyday matter, so there was no change between the pre-lesson and post-lesson surveys.

F3: Interest in intellectual property

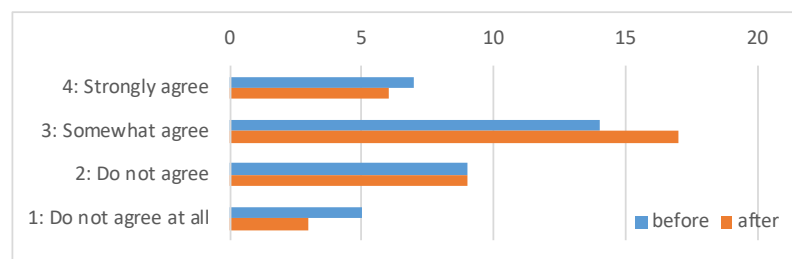
Q05 I would like to know more about intellectual property rights*

Survey items	before	after
4: Strongly agree	2	5
3: Somewhat agree	13	13
2: Do not agree	15	12
1: Do not agree at all	1	1



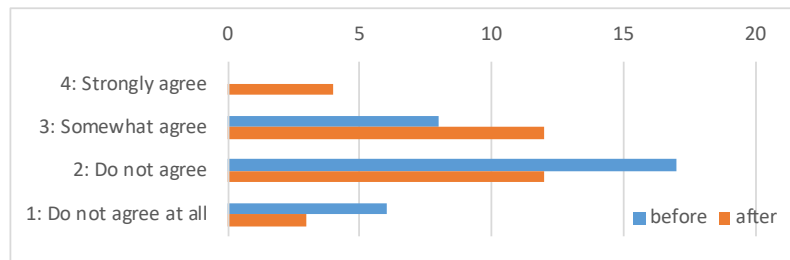
Q05 I would like to know more about intellectual property rights*

Survey items	before	after
4: Strongly agree	7	6
3: Somewhat agree	14	17
2: Do not agree	9	9
1: Do not agree at all	5	3



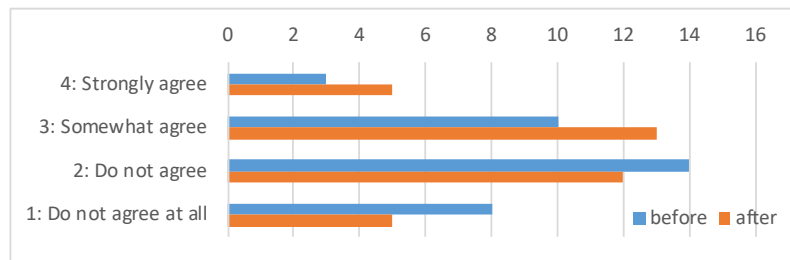
Q06-1 I am sometimes aware of patent rights and design rights in my day-to-day life

Survey items	before	after
4: Strongly agree	0	4
3: Somewhat agree	8	12
2: Do not agree	17	12
1: Do not agree at all	6	3



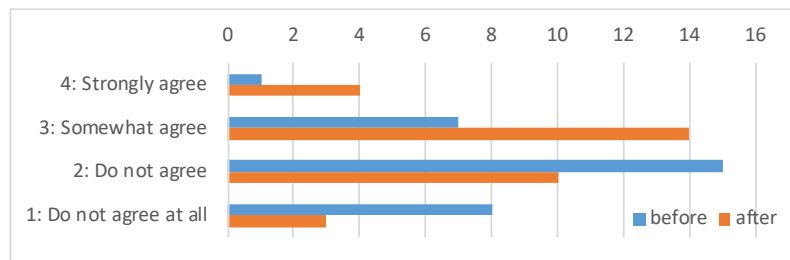
Q06-1 I am sometimes aware of patent rights and design rights in my day-to-day life

Survey items	before	after
4: Strongly agree	3	5
3: Somewhat agree	10	13
2: Do not agree	14	12
1: Do not agree at all	8	5



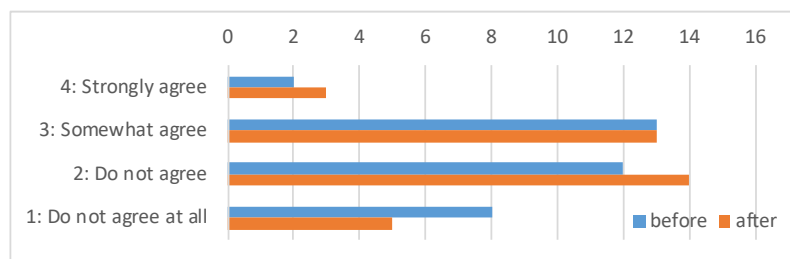
Q06-2 I am sometimes aware of trademark rights in my day-to-day life

Survey items	before	after
4: Strongly agree	1	4
3: Somewhat agree	7	14
2: Do not agree	15	10
1: Do not agree at all	8	3



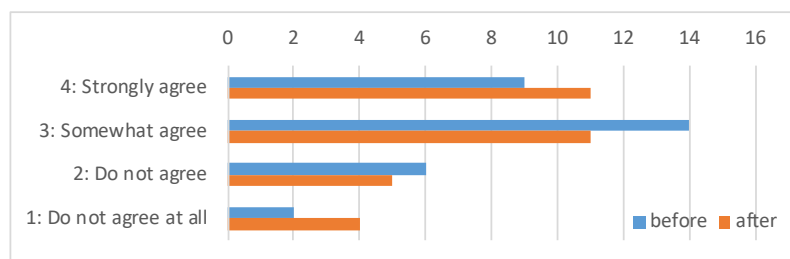
Q06-2 I am sometimes aware of trademark rights in my day-to-day life

Survey items	before	after
4: Strongly agree	2	3
3: Somewhat agree	13	13
2: Do not agree	12	14
1: Do not agree at all	8	5



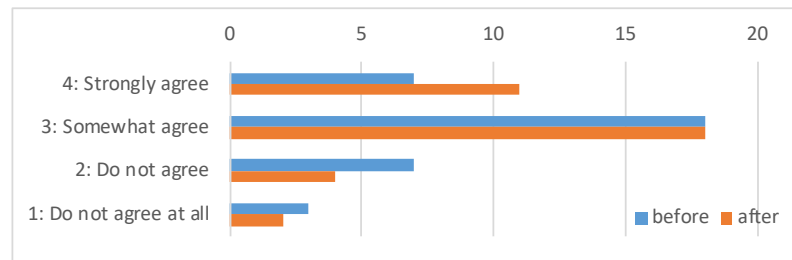
Q06-3 I am sometimes aware of copyrights in my day-to-day life

Survey items	before	after
4: Strongly agree	9	11
3: Somewhat agree	14	11
2: Do not agree	6	5
1: Do not agree at all	2	4



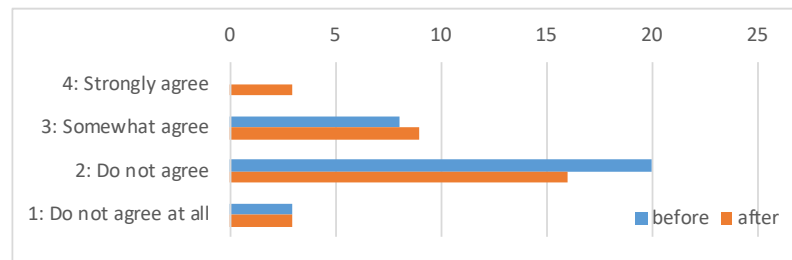
Q06-3 I am sometimes aware of copyrights in my day-to-day life

Survey items	before	after
4: Strongly agree	7	11
3: Somewhat agree	18	18
2: Do not agree	7	4
1: Do not agree at all	3	2



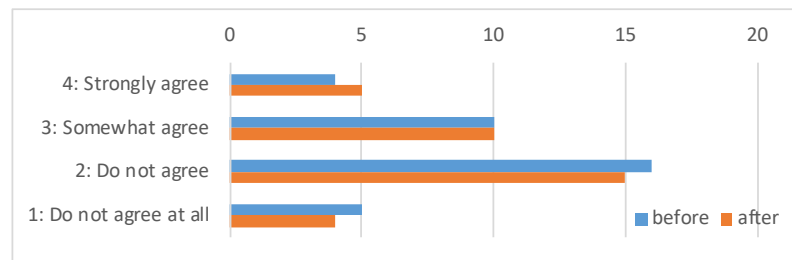
Q08 I find news about intellectual property rights* interesting

Survey items	before	after
4: Strongly agree	0	3
3: Somewhat agree	8	9
2: Do not agree	20	16
1: Do not agree at all	3	3



Q08 I find news about intellectual property rights* interesting

Survey items	before	after
4: Strongly agree	4	5
3: Somewhat agree	10	10
2: Do not agree	16	15
1: Do not agree at all	5	4



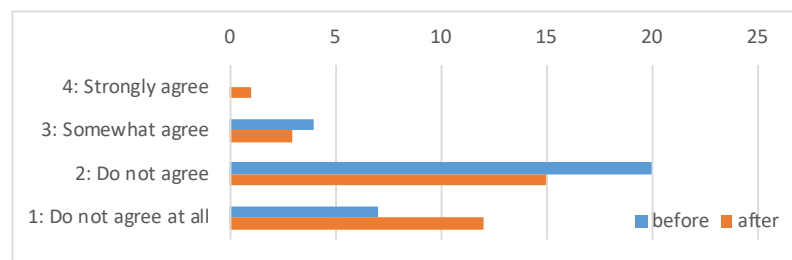
(Discussion)

It is apparent that understanding of rights and interest in intellectual property improved between the pre-lesson and post-lesson surveys.

F4: Respect for intellectual property

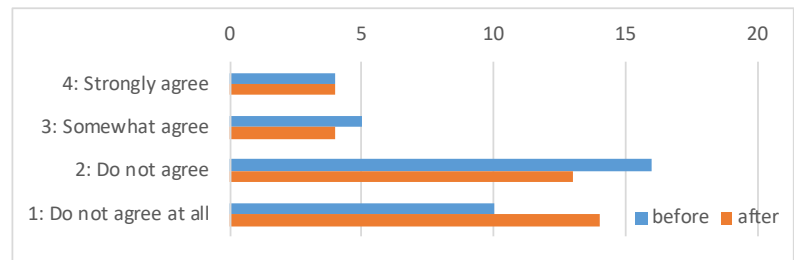
Q07 My day-to-day life would not be disrupted even if intellectual property rights* were not protected

Survey items	before	after
4: Strongly agree	0	1
3: Somewhat agree	4	3
2: Do not agree	20	15
1: Do not agree at all	7	12



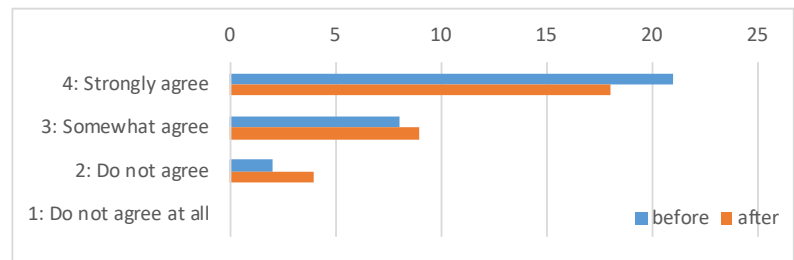
Q07 My day-to-day life would not be disrupted even if intellectual property rights* were not protected

Survey items	before	after
4: Strongly agree	4	4
3: Somewhat agree	5	4
2: Do not agree	16	13
1: Do not agree at all	10	14



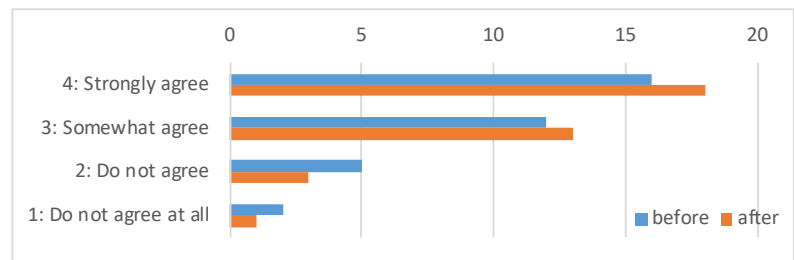
Q09-1 It is important that inventions and designs be protected

Survey items	before	after
4: Strongly agree	21	18
3: Somewhat agree	8	9
2: Do not agree	2	4
1: Do not agree at all	0	0



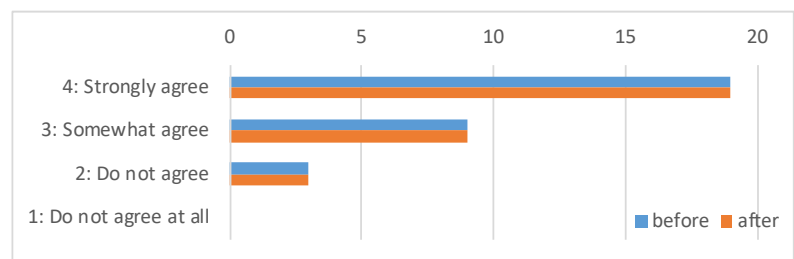
Q09-1 It is important that inventions and designs be protected

Survey items	before	after
4: Strongly agree	16	18
3: Somewhat agree	12	13
2: Do not agree	5	3
1: Do not agree at all	2	1



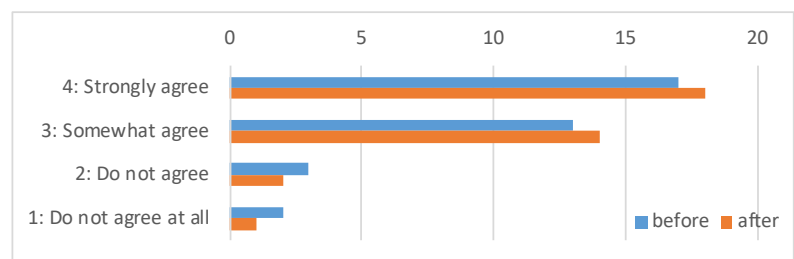
Q09-2 It is important that trademark rights be protected

Survey items	before	after
4: Strongly agree	19	19
3: Somewhat agree	9	9
2: Do not agree	3	3
1: Do not agree at all	0	0



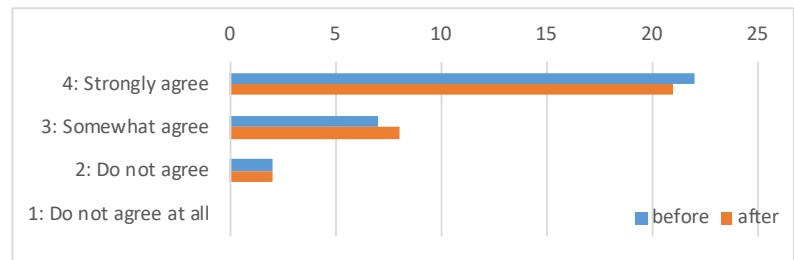
Q09-2 It is important that trademark rights be protected

Survey items	before	after
4: Strongly agree	17	18
3: Somewhat agree	13	14
2: Do not agree	3	2
1: Do not agree at all	2	1



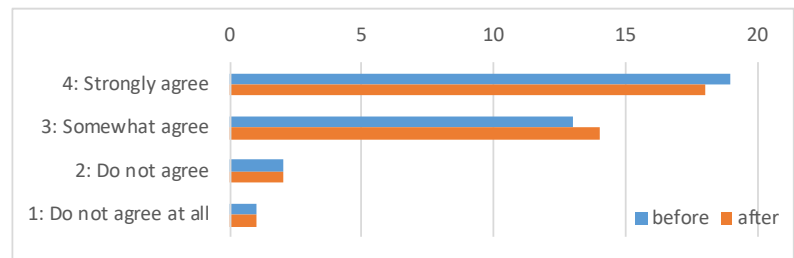
Q09-3 It is important that copyrights be protected

Survey items	before	after
4: Strongly agree	22	21
3: Somewhat agree	7	8
2: Do not agree	2	2
1: Do not agree at all	0	0



Q09-3 It is important that copyrights be protected

Survey items	before	after
4: Strongly agree	19	18
3: Somewhat agree	13	14
2: Do not agree	2	2
1: Do not agree at all	1	1



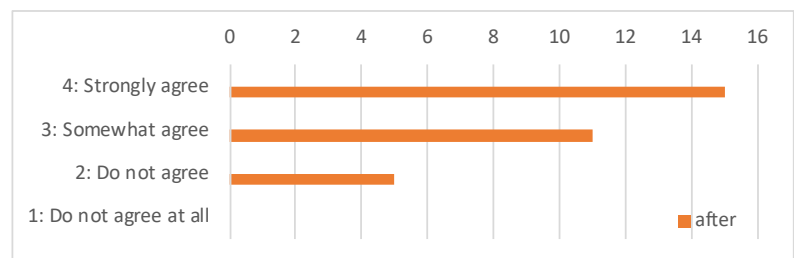
(Discussion)

As for "respect for intellectual property," it can be seen that understanding of and interest in rights improved between the pre-lesson and post-lesson surveys.

(b) Post-lesson interest in intellectual property stimulated via teaching materials

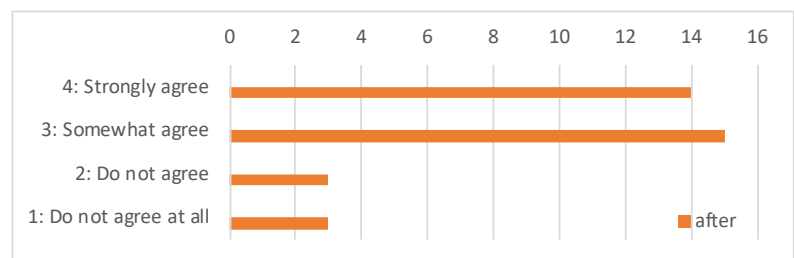
Q13 Learning about intellectual property was interesting

Survey items	before	after
4: Strongly agree	-	15
3: Somewhat agree	-	11
2: Do not agree	-	5
1: Do not agree at all	-	0



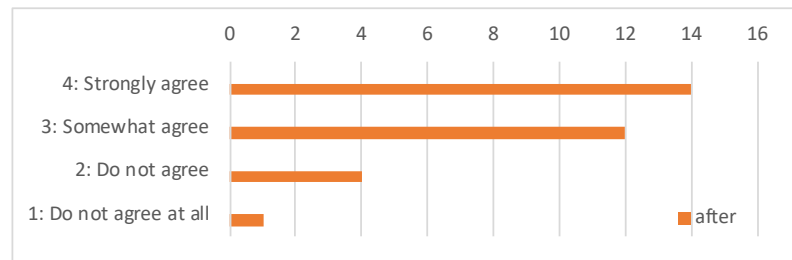
Q13 Learning about intellectual property was interesting

Survey items	before	after
4: Strongly agree	-	14
3: Somewhat agree	-	15
2: Do not agree	-	3
1: Do not agree at all	-	3



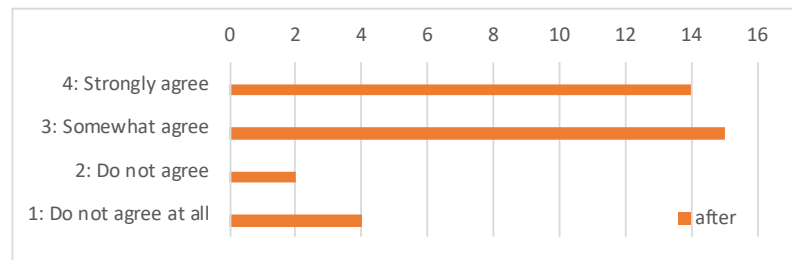
Q14 I found intellectual property interesting because it dealt with familiar products

Survey items	before	after
4: Strongly agree	-	14
3: Somewhat agree	-	12
2: Do not agree	-	4
1: Do not agree at all	-	1



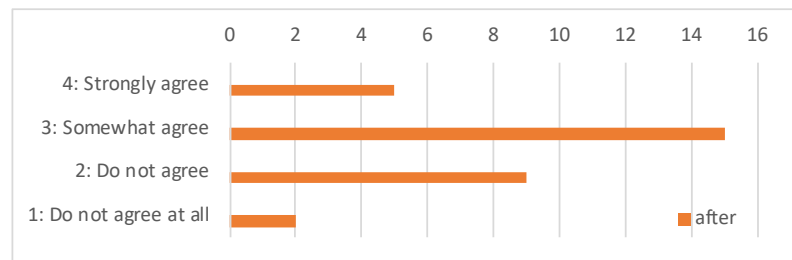
Q14 I found intellectual property interesting because it dealt with familiar products

Survey items	before	after
4: Strongly agree	-	14
3: Somewhat agree	-	15
2: Do not agree	-	2
1: Do not agree at all	-	4



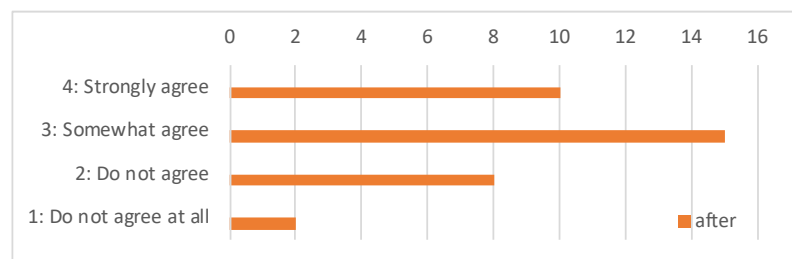
Q15 I would like more time set aside for us to come up with our own ideas

Survey items	before	after
4: Strongly agree	-	5
3: Somewhat agree	-	15
2: Do not agree	-	9
1: Do not agree at all	-	2



Q15 I would like more time set aside for us to come up with our own ideas

Survey items	before	after
4: Strongly agree	-	10
3: Somewhat agree	-	15
2: Do not agree	-	8
1: Do not agree at all	-	2



(Discussion)

With regard to “interest in intellectual property”, students had a basic knowledge of intellectual property rights from regular lessons, but they gained a greater understanding of intellectual property rights from the familiar examples used in this lesson.

(4) National Institute of Technology, Numazu College

(i) Lesson

A lesson was conducted in three 50-minute classes.

This lesson was developed by combining the teaching materials and TRIZ, and was designed to have students analyze and examine the inventive principles used in the manufacture of instant noodles and inspire the development of new noodles based on TRIZ. Students participating in this lesson had a basic understanding of TRIZ, a topic considered difficult to comprehend, and the familiar subject of instant noodles was used as an example to explain it in an easy-to-understand manner.



[Conceptual Hints - How to Explore Ideas with TRIZ]

1. Intellectual property activities

1.1 WIPO (World Intellectual Property Organization) and TRIZ education

1.2 Cabinet Office's "Lesson Guide for Creating the Future" for intellectual property creation education and TRIZ

1.3 Japan Patent Office's "Hints for Utilizing Ideas" and TRIZ

2. TRIZ

2.1 40 Principles of Invention

2.2 "ABCD crispy rice crackers are delicious!"

2.3 Contradiction matrices

2.4 TRIZ practice cases (3D block cars, scissors, instant noodles)

3. Chicken Ramen

3.1 Analysis based on manufacturing methods

3.2 Relationship between seasoned instant noodle manufacturing methods and patents

3.3 Patents for seasoned instant noodles and corporate activities

3.4 Protection of intellectual property rights

3.5 Cup Noodle and intellectual property rights

4. Using TRIZ to think about instant ramen

4.1 IF_QCD_SEC analysis (problem discovery sheet)

4.2 Nine-screen method

4.3 40 Principles of Invention

4.4 Instant ramen and the Principles of Invention

5. Using TRIZ to think about issues around you

5.1 Painless injections

5.2 Quick-drying umbrellas

5.3 Shapes of Shinkansen trains

5.4 Creating ideas using the Principles of Invention as a hint (contradiction matrices/40 Principles of Invention)

6. Utilization of intellectual property rights

6.1 Design rights, trademark rights, etc.

6.2 Respect for creations, fakes

6.3 Intellectual property creation cycle (creation → protection → utilization)

6.4 Let's find out with J-platpat

6.5 Let's apply for the Patent Contest

(ii) Interview content

(a) Teaching materials

(Convenience of teaching materials, points where the teaching materials should be improved, age groups for which the lectures are appropriate)

• Instructor (Takayoshi Otsu)

It was often very interesting to apply the subject matter in the teaching materials to TRIZ, and it was very fun to use the materials in class. Since there is no detailed description of the facts, the examples can be investigated from various angles, so the materials are fine as they are. However, the order given is "problem"-> "idea"-> "invention" but a prior "notion" is needed to get to the "problem", and the series should probably end with "utilization" rather than "invention". The lessons can likely be used by students of any age.

(b) Teaching notes

(Convenience, points that should be improved, subjects for which the lessons are appropriate)

- Instructor (Takayoshi Otsu)

Please incorporate TRIZ, the conceptual principles of invention. In the part on Momofuku Ando introduced in the “Anything Can Be a Hint” section, the teaching materials dig down far enough, but it might be good to have students dig even deeper. For example, understanding what the global consumption ranking for instant noodles is, if Japan really was the first country to develop instant noodles, what Momofuku Ando’s background was, and why instant noodles became such an explosive hit will help students to understand why intellectual property is important. As for the work section, I think presenting specific examples rather than just having a vague “Let’s Give It a Try” framework would better elicit ideas from students. It would be good to convey to students that intellectual property is not a difficult topic because hints are available all around them. As for the subjects for which these lessons would be appropriate, there are already lessons being taught on intellectual property, but this topic can be dealt with in any subject and incorporating TRIZ will help deepen understanding further.

(c) Lessons

- Instructor (Takayoshi Otsu)

The content of the teaching materials was easy to arrange, so it was easy to teach from various perspectives. This time we were able to look at the consumption ranking but also rankings from other perspectives, an intellectual property study on instant noodles, the principles when applied to TRIZ, and the discovery of problems. I was able to develop lessons from a business perspective leading from the protection of intellectual property to utilization, and to conduct very useful lessons using these teaching materials.

Students

- ✧ I was able to think about something I usually eat, so it became very personal.
- ✧ I was surprised to learn TRIZ's 40 Principles of Invention through instant ramen. I want to think about various things as I go about my daily life.

- ✧ I found that using TRIZ makes it easier to put together ideas.
- ✧ I want to be able to utilize the TRIZ Principles of Invention.
- ✧ I think we should pay more attention to the principles of invention that are used all around us.
- ✧ I was able to discover more interest in intellectual property.
- ✧ I became interested in patents.
- ✧ I was shocked to learn that Nissin's instant Chinese noodle patent had been bought. I thought it is being used well.
- ✧ I thought that patents are valuable and are even being used like currency.

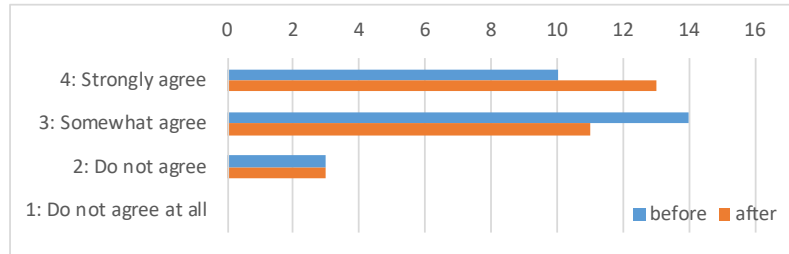
(iii) Questionnaire results

(a) Pre- and post-lesson awareness surveys on intellectual property

F1: Willingness to engage in creative activities

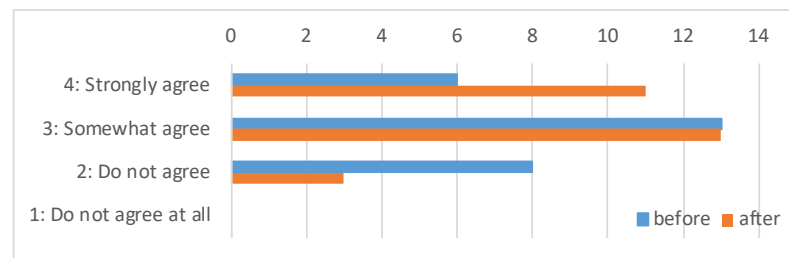
Q01 I enjoy thinking up ideas

Survey items	before	after
4: Strongly agree	10	13
3: Somewhat agree	14	11
2: Do not agree	3	3
1: Do not agree at all	0	0



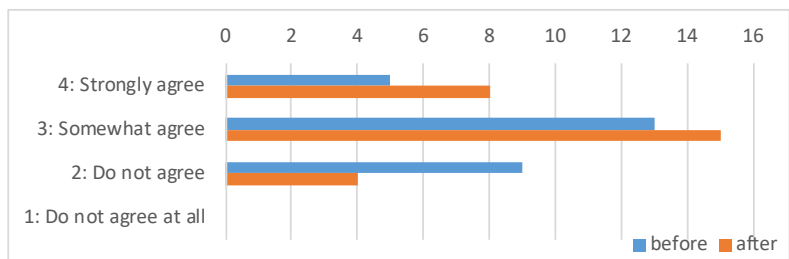
Q02 I wonder sometimes if I can come up with better ideas about things around me

Survey items	before	after
4: Strongly agree	6	11
3: Somewhat agree	13	13
2: Do not agree	8	3
1: Do not agree at all	0	0



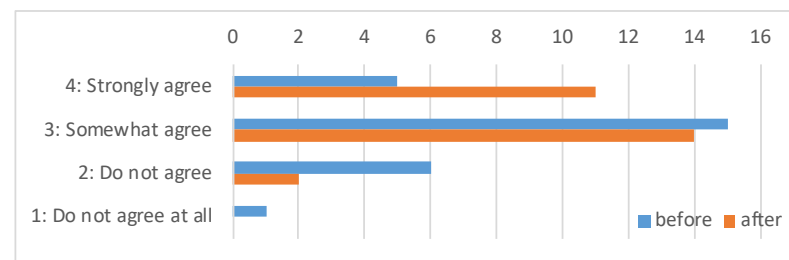
Q03 I am interested in the workings of equipment and machinery widely used in my day-to-day life

Survey items	before	after
4: Strongly agree	5	8
3: Somewhat agree	13	15
2: Do not agree	9	4
1: Do not agree at all	0	0



Q04 I like thinking for myself while making things

Survey items	before	after
4: Strongly agree	5	11
3: Somewhat agree	15	14
2: Do not agree	6	2
1: Do not agree at all	1	0



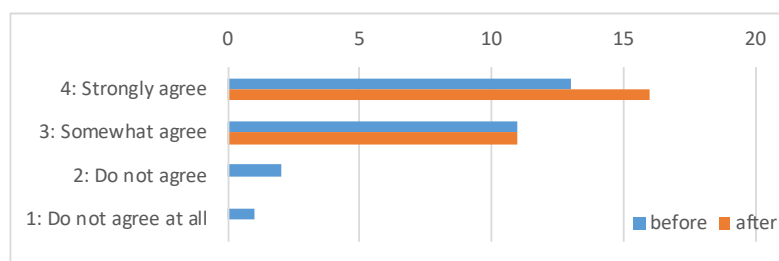
(Discussion)

It is apparent that more students in their responses to the post-lesson survey expressed willingness to engage in creative activities. Lessons are usually conducted using TRIS (problem-finding/problem-solving ideas) and such willingness is high but, after this lesson, the willingness was even higher.

F2: Awareness of the value of sharing ideas

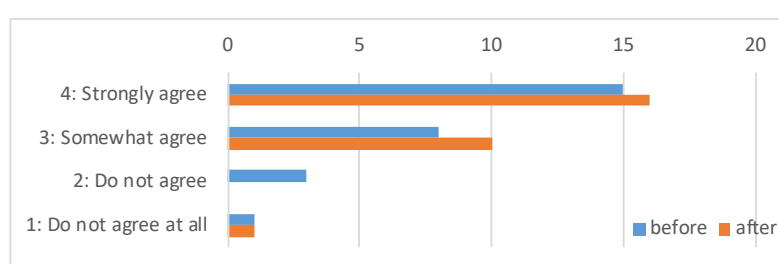
Q10 I would be pleased if my friends would use my ideas

Survey items	before	after
4: Strongly agree	13	16
3: Somewhat agree	11	11
2: Do not agree	2	0
1: Do not agree at all	1	0



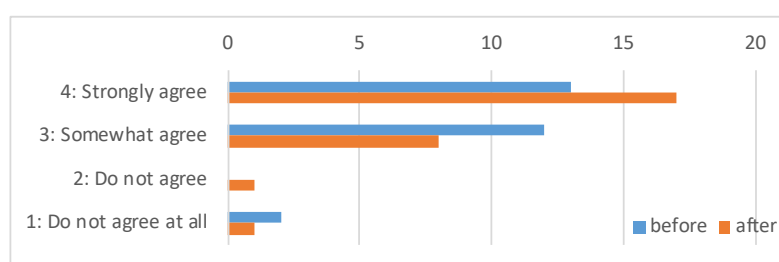
Q11 I would like to actively incorporate good ideas from my friends

Survey items	before	after
4: Strongly agree	15	16
3: Somewhat agree	8	10
2: Do not agree	3	0
1: Do not agree at all	1	1



Q12 I think it is good for people to show each other their ideas

Survey items	before	after
4: Strongly agree	13	17
3: Somewhat agree	12	8
2: Do not agree	0	1
1: Do not agree at all	2	1



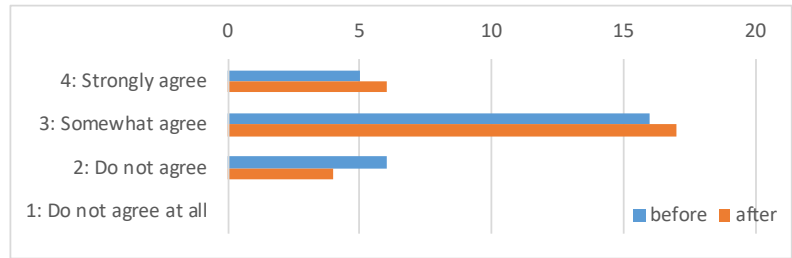
(Discussion)

“Awareness of the value of sharing ideas” is a routine matter, perhaps because students are regularly applying for patent contests or making presentations at academic conferences, so there were no major changes between the pre-lesson and post-lesson surveys, although heightened awareness did lead to a decline in “1: Do not agree at all” and “2: Do not agree” responses.

F3: Interest in intellectual property

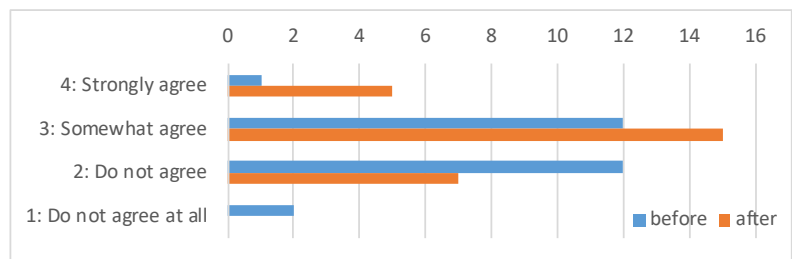
Q05 I would like to know more about intellectual property rights*

Survey items	before	after
4: Strongly agree	5	6
3: Somewhat agree	16	17
2: Do not agree	6	4
1: Do not agree at all	0	0



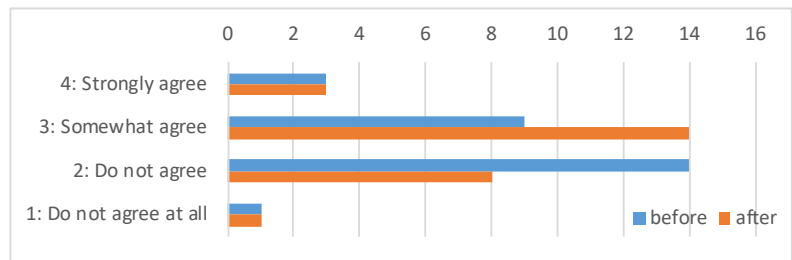
Q06-1 I am sometimes aware of patent rights and design rights in my day-to-day

Survey items	before	after
4: Strongly agree	1	5
3: Somewhat agree	12	15
2: Do not agree	12	7
1: Do not agree at all	2	0



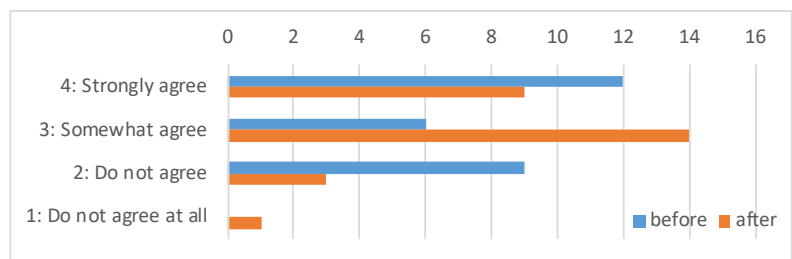
Q06-2 I am sometimes aware of trademark rights in my day-to-day life

Survey items	before	after
4: Strongly agree	3	3
3: Somewhat agree	9	14
2: Do not agree	14	8
1: Do not agree at all	1	1



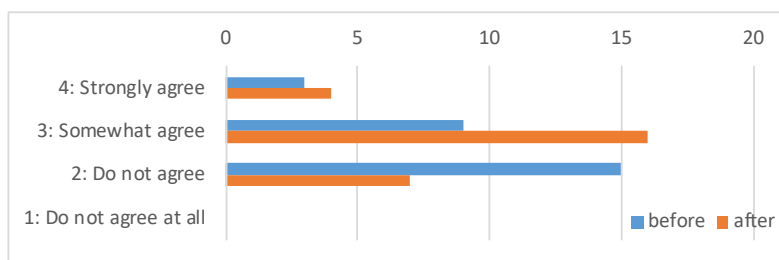
Q06-3 I am sometimes aware of copyrights in my day-to-day life

Survey items	before	after
4: Strongly agree	12	9
3: Somewhat agree	6	14
2: Do not agree	9	3
1: Do not agree at all	0	1



Q08 I find news about intellectual property rights* interesting

Survey items	before	after
4: Strongly agree	3	4
3: Somewhat agree	9	16
2: Do not agree	15	7
1: Do not agree at all	0	0



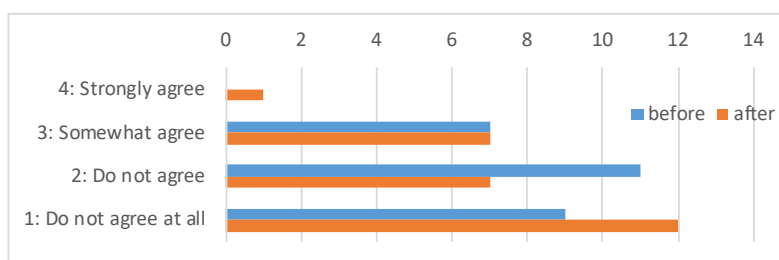
(Discussion)

As for "interest in intellectual property," it can be seen that understanding of and interest in rights deepened between the pre-lesson and post-lesson surveys.

F4: Respect for intellectual property

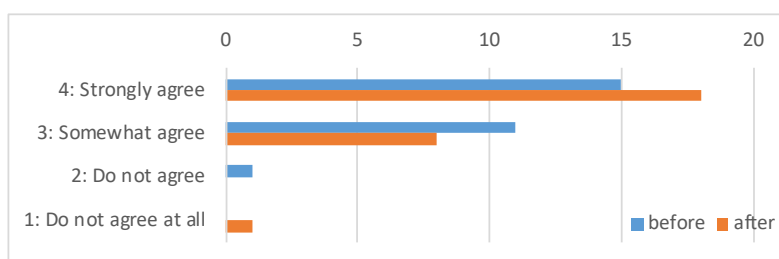
Q07 My day-to-day life would not be disrupted even if intellectual property rights* were not protected

Survey items	before	after
4: Strongly agree	0	1
3: Somewhat agree	7	7
2: Do not agree	11	7
1: Do not agree at all	9	12



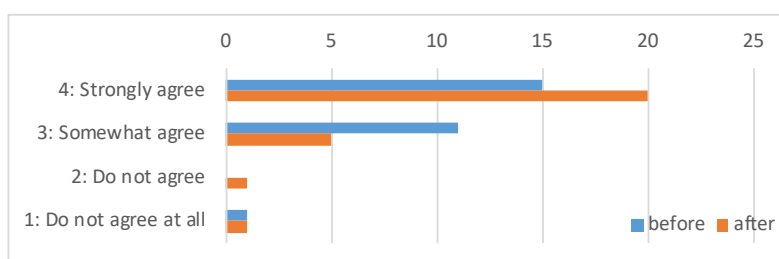
Q09-1 It is important that inventions and designs be protected

Survey items	before	after
4: Strongly agree	15	18
3: Somewhat agree	11	8
2: Do not agree	1	0
1: Do not agree at all	0	1



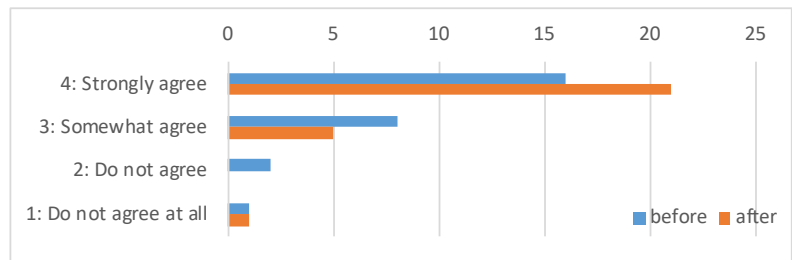
Q09-2 It is important that trademark rights be protected

Survey items	before	after
4: Strongly agree	15	20
3: Somewhat agree	11	5
2: Do not agree	0	1
1: Do not agree at all	1	1



Q09-3 It is important that copyrights be protected

Survey items	before	after
4: Strongly agree	16	21
3: Somewhat agree	8	5
2: Do not agree	2	0
1: Do not agree at all	1	1



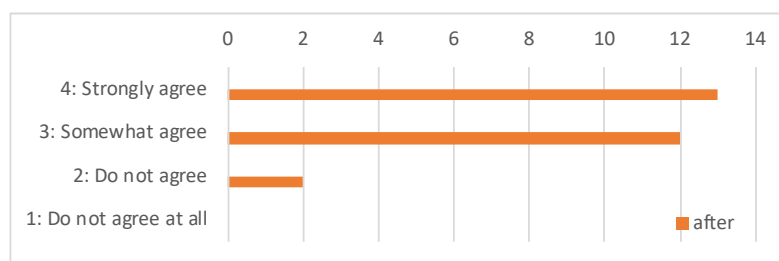
(Discussion)

As for "respect for intellectual property," it is apparent that understanding of and interest in rights deepened between the pre-lesson and post-lesson surveys.

(b) Post-lesson interest in intellectual property stimulated via teaching materials

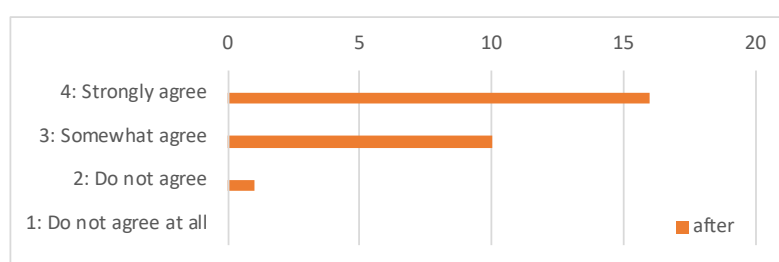
Q13 Learning about intellectual property was interesting

Survey items	before	after
4: Strongly agree	-	13
3: Somewhat agree	-	12
2: Do not agree	-	2
1: Do not agree at all	-	0



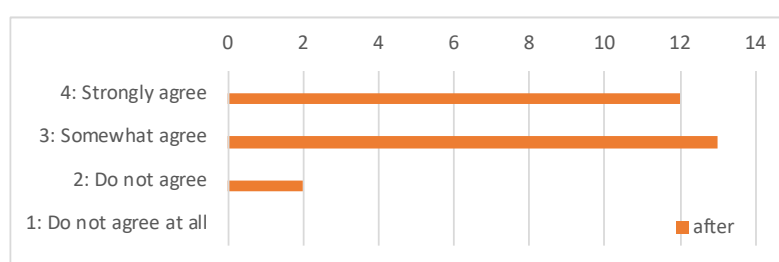
Q14 I found intellectual property interesting because it dealt with familiar products

Survey items	before	after
4: Strongly agree	-	16
3: Somewhat agree	-	10
2: Do not agree	-	1
1: Do not agree at all	-	0



Q15 I would like more time set aside for us to come up with our own ideas

Survey items	before	after
4: Strongly agree	-	12
3: Somewhat agree	-	13
2: Do not agree	-	2
1: Do not agree at all	-	0



(Discussion)

The questionnaire results show that the demonstration lesson was useful in boosting interest in intellectual property. Most notably, there were no “1: Do not agree at all” responses to any of the questions, indicating that this project further deepened understanding of intellectual property rights.

(5) Summary of questionnaire analyses

The results of the questionnaires from each of the two regular high schools and the two colleges from National Institute of Technology are presented below.

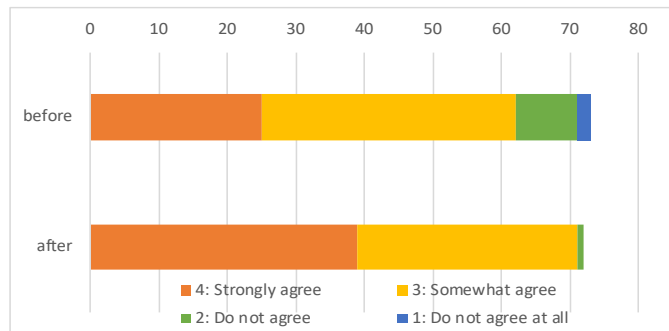
- Regular high school (accredited SSHs): Blue, upper row
- Colleges from National Institute of Technology: Green, bottom row

(i) Awareness of intellectual property before and after lessons

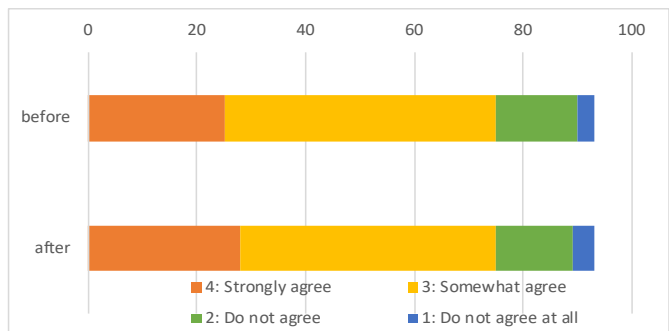
F1: Willingness to engage in creative activities

Q01 I enjoy thinking up ideas

Survey items	before	after
4: Strongly agree	25	39
3: Somewhat agree	37	32
2: Do not agree	9	1
1: Do not agree at all	2	0

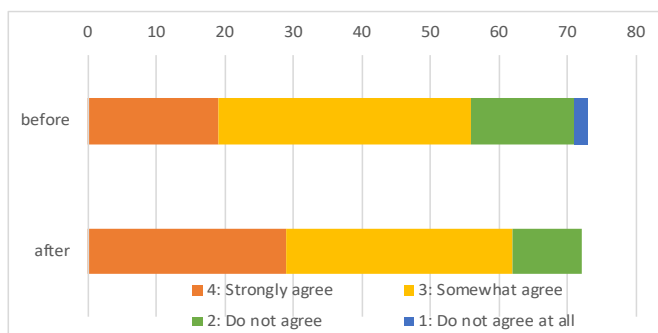


Survey items	before	after
4: Strongly agree	25	28
3: Somewhat agree	50	47
2: Do not agree	15	14
1: Do not agree at all	3	4

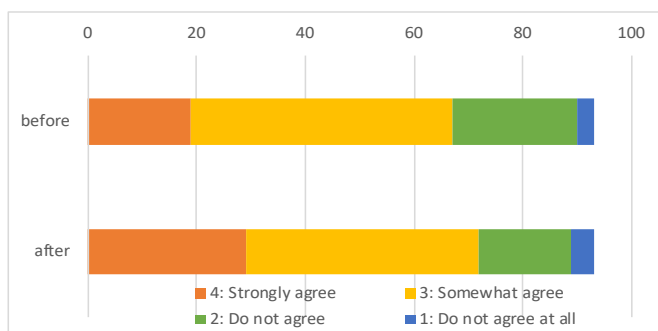


Q02 I wonder sometimes if I can come up with better ideas about things around me

Survey items	before	after
4: Strongly agree	19	29
3: Somewhat agree	37	33
2: Do not agree	15	10
1: Do not agree at all	2	0

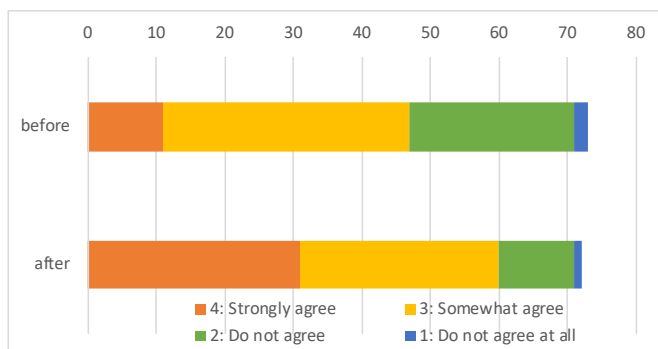


Survey items	before	after
4: Strongly agree	19	29
3: Somewhat agree	48	43
2: Do not agree	23	17
1: Do not agree at all	3	4

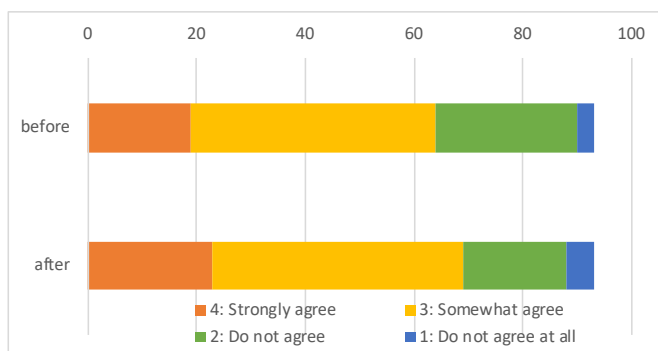


Q03 I am interested in the workings of equipment and machinery widely used in my day-to-day life

Survey items	before	after
4: Strongly agree	11	31
3: Somewhat agree	36	29
2: Do not agree	24	11
1: Do not agree at all	2	1

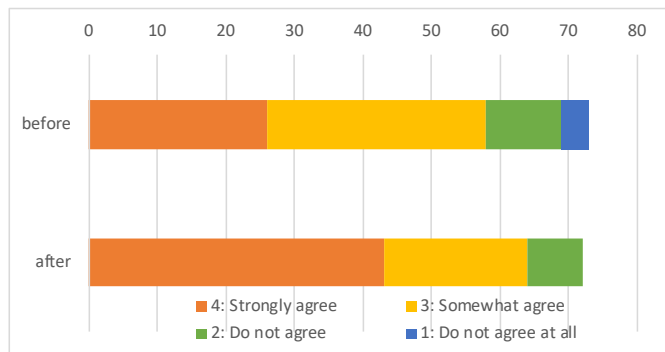


Survey items	before	after
4: Strongly agree	19	23
3: Somewhat agree	45	46
2: Do not agree	26	19
1: Do not agree at all	3	5

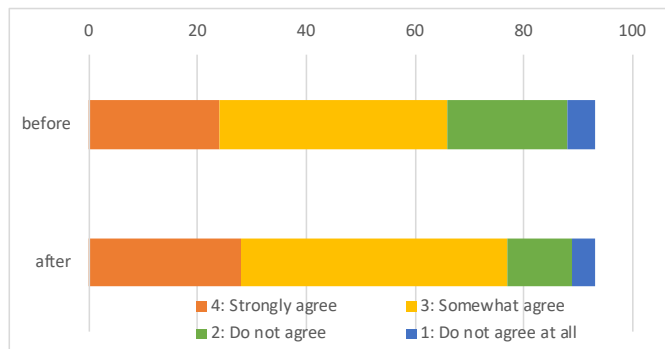


Q04 I like thinking for myself while making things

Survey items	before	after
4: Strongly agree	26	43
3: Somewhat agree	32	21
2: Do not agree	11	8
1: Do not agree at all	4	0



Survey items	before	after
4: Strongly agree	24	28
3: Somewhat agree	42	49
2: Do not agree	22	12
1: Do not agree at all	5	4



(Discussion)

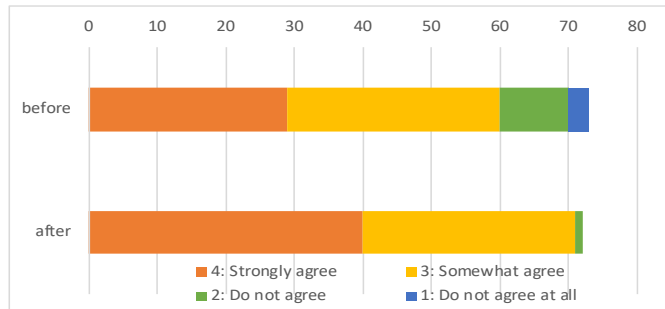
A comparison of the pre- and post-response figures for the sum total of "4. Strongly agree" and "3. Somewhat agree" shows that the post-response figures increased significantly, especially among the regular high school students. This can be seen as an effect of the intellectual property class, and it seems to verify the importance of intellectual property education for high school students—particularly those in the regular course, who are not usually exposed to intellectual property.

As for College and National Institute of Technology, the sum total for "4. Strongly agree" and "3. Somewhat agree" was as high as or higher than that of regular high schools, although the change was not as large as that of regular high schools. The reason why there was no significant change is thought to be because the students regularly engage in creative activities and are highly motivated by nature.

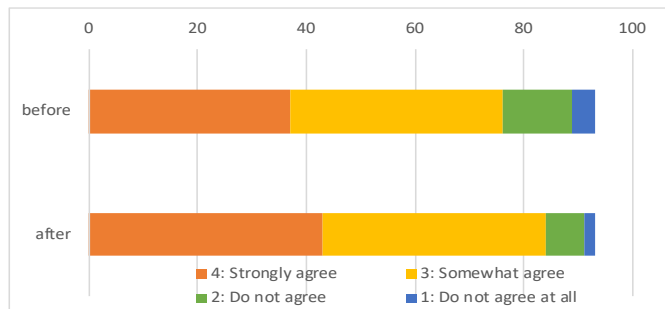
F2: Awareness of the value of sharing ideas

Q10 I would be pleased if my friends would use my ideas

Survey items	before	after
4: Strongly agree	29	40
3: Somewhat agree	31	31
2: Do not agree	10	1
1: Do not agree at all	3	0

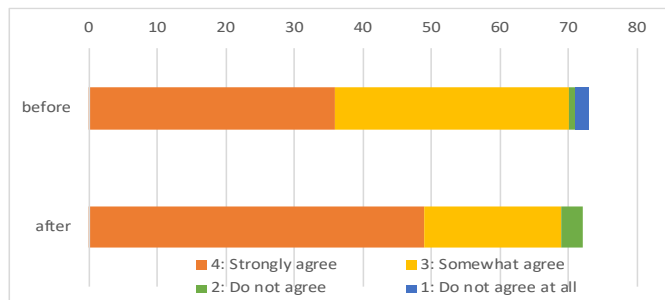


Survey items	before	after
4: Strongly agree	37	43
3: Somewhat agree	39	41
2: Do not agree	13	7
1: Do not agree at all	4	2

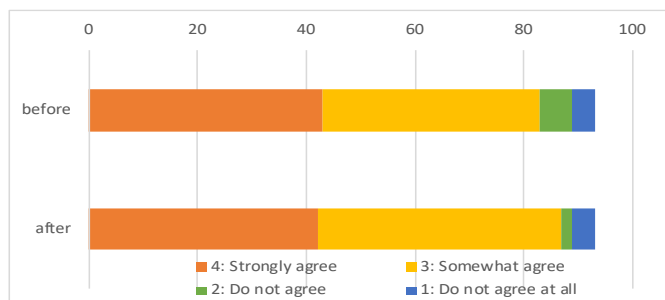


Q11 I would like to actively incorporate good ideas from my friends

Survey items	before	after
4: Strongly agree	36	49
3: Somewhat agree	34	20
2: Do not agree	1	3
1: Do not agree at all	2	0

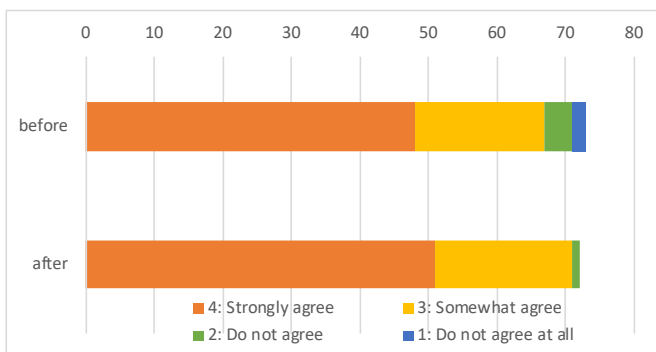


Survey items	before	after
4: Strongly agree	43	42
3: Somewhat agree	40	45
2: Do not agree	6	2
1: Do not agree at all	4	4

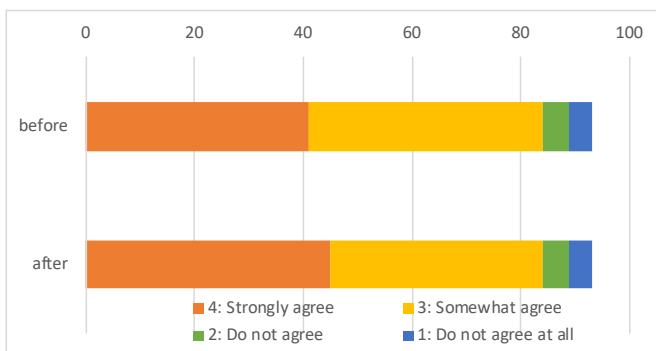


Q12 I think it is good for people to show each other their ideas

Survey items	before	after
4: Strongly agree	48	51
3: Somewhat agree	19	20
2: Do not agree	4	1
1: Do not agree at all	2	0



Survey items	before	after
4: Strongly agree	41	45
3: Somewhat agree	43	39
2: Do not agree	5	5
1: Do not agree at all	4	4



(Discussion)

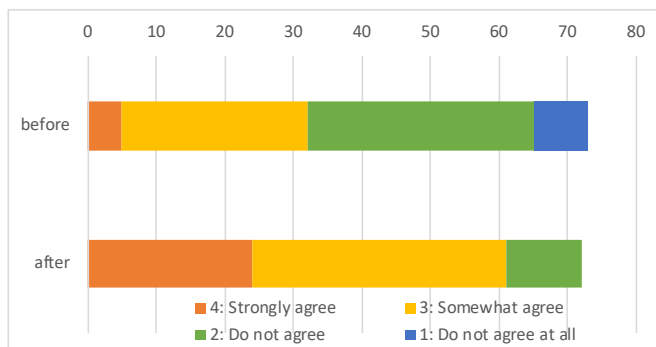
Post-event growth in terms of awareness regarding the value of sharing ideas was also significant, especially with respect to the total of "4. Strongly agree" and "3. Somewhat agree" at the regular high school level. This is thought to result from the incorporation of group work into the classes in regular high schools, where students learned to share their ideas with others through experience.

As for College and National Institute of Technology, no significant change was observed (as was the case for regular high schools), which may be due in part to the fact that group work was not conducted College and National Institute of Technologythere.

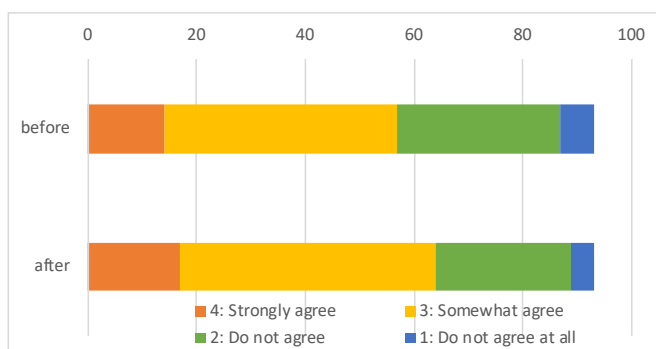
F3: Interest in intellectual property

Q05 I would like to know more about intellectual property rights*

Survey items	before	after
4: Strongly agree	5	24
3: Somewhat agree	27	37
2: Do not agree	33	11
1: Do not agree at all	8	0

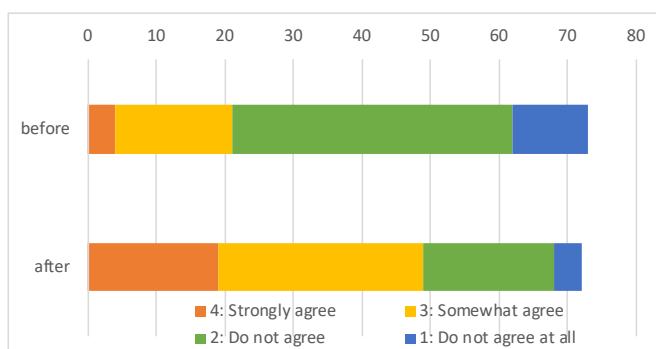


Survey items	before	after
4: Strongly agree	14	17
3: Somewhat agree	43	47
2: Do not agree	30	25
1: Do not agree at all	6	4

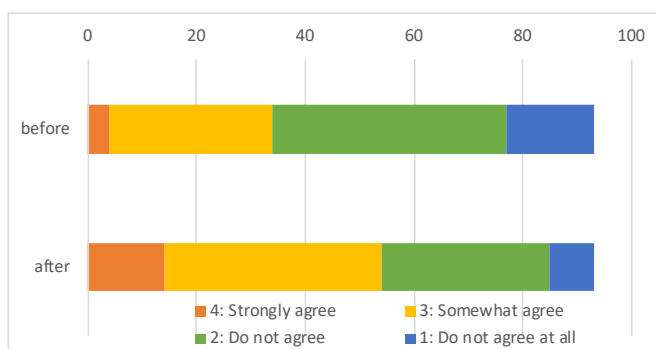


Q06-1 I am sometimes aware of patent rights and design rights in my day-to-day life

Survey items	before	after
4: Strongly agree	4	19
3: Somewhat agree	17	30
2: Do not agree	41	19
1: Do not agree at all	11	4

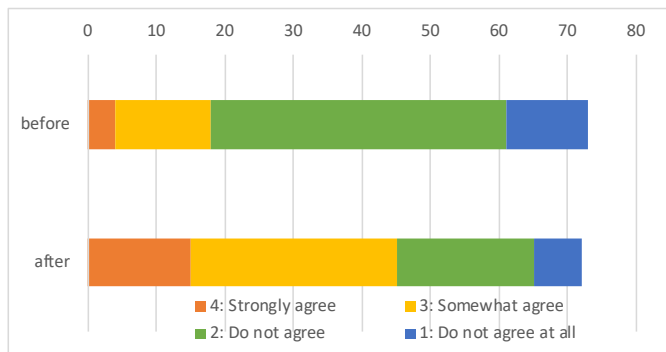


Survey items	before	after
4: Strongly agree	4	14
3: Somewhat agree	30	40
2: Do not agree	43	31
1: Do not agree at all	16	8

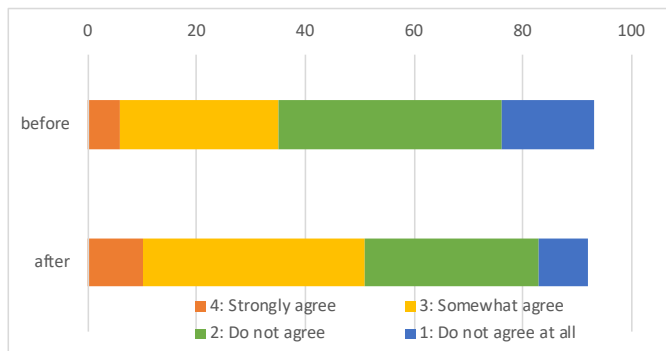


Q06-2 I am sometimes aware of trademark rights in my day-to-day life

Survey items	before	after
4: Strongly agree	4	15
3: Somewhat agree	14	30
2: Do not agree	43	20
1: Do not agree at all	12	7

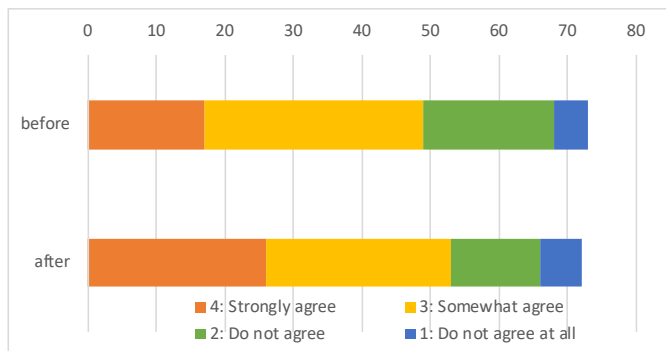


Survey items	before	after
4: Strongly agree	6	10
3: Somewhat agree	29	41
2: Do not agree	41	32
1: Do not agree at all	17	9

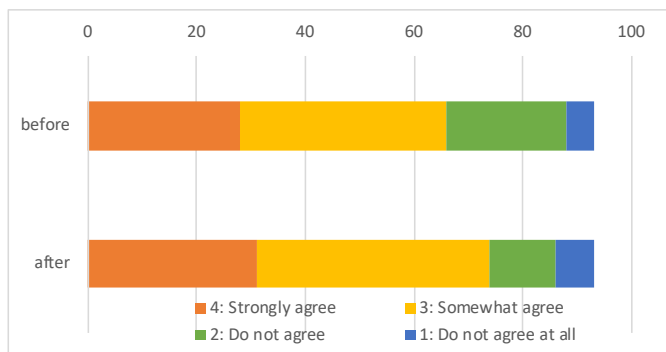


Q06-3 I am sometimes aware of copyrights in my day-to-day life

Survey items	before	after
4: Strongly agree	17	26
3: Somewhat agree	32	27
2: Do not agree	19	13
1: Do not agree at all	5	6

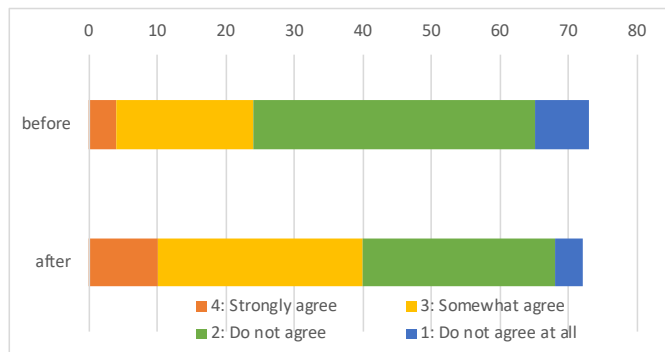


Survey items	before	after
4: Strongly agree	28	31
3: Somewhat agree	38	43
2: Do not agree	22	12
1: Do not agree at all	5	7

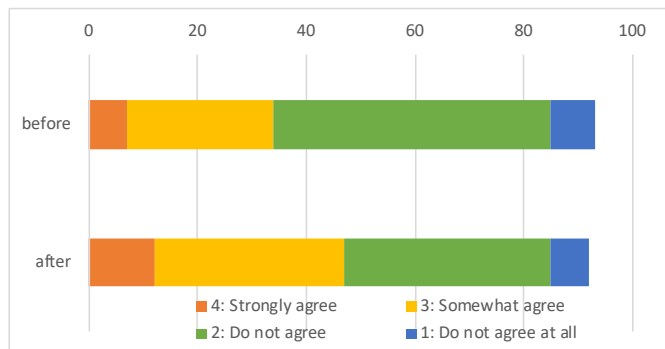


Q08 I find news about intellectual property rights* interesting

Survey items	before	after
4: Strongly agree	4	10
3: Somewhat agree	20	30
2: Do not agree	41	28
1: Do not agree at all	8	4



Survey items	before	after
4: Strongly agree	7	12
3: Somewhat agree	27	35
2: Do not agree	51	38
1: Do not agree at all	8	7



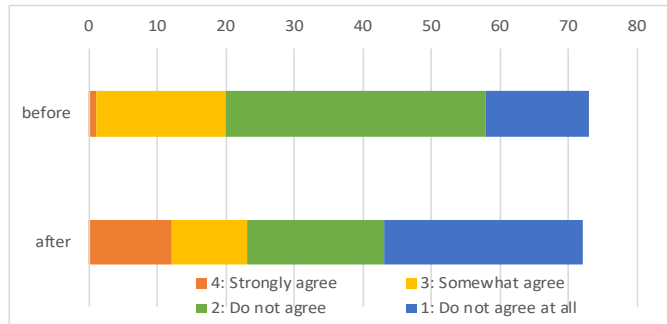
(Discussion)

Comparing the pre- and post-survey figures for the sum total of "4. Strongly agree" and "3. Somewhat agree," it is clear that awareness of patents, designs, and trademarks in general high schools ranged from 20 to 50 percent pre- and post-survey. While the posterior results showed a significant increase in the number of respondents, copyrights did not show much change. A similar trend can also be observed for College and National Institute of Technology. This may prove that although high school students are exposed to copyright in their daily lives, they are not familiar with patents, designs, or trademarks—but their awareness of these rights will increase rapidly if they have the opportunity to receive appropriate education.

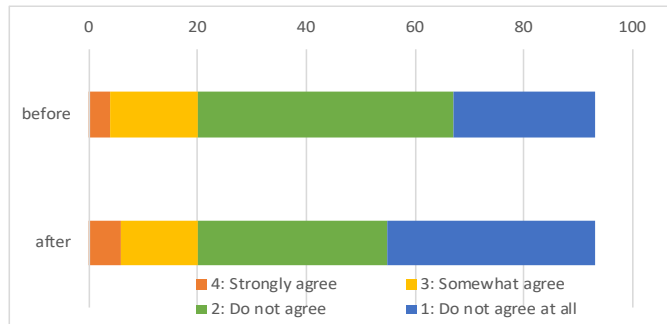
F4: Respect for intellectual property

Q07 My day-to-day life would not be disrupted even if intellectual property rights* were not protected

Survey items	before	after
4: Strongly agree	1	12
3: Somewhat agree	19	11
2: Do not agree	38	20
1: Do not agree at all	15	29

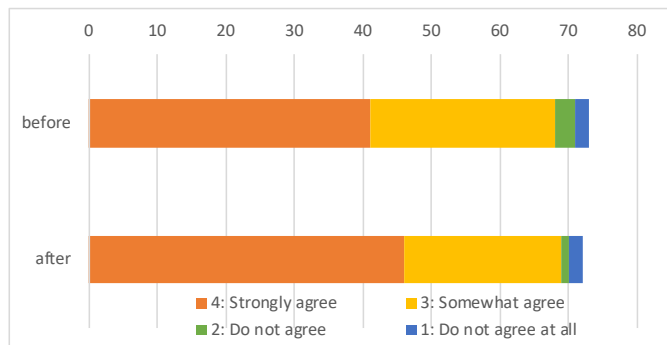


Survey items	before	after
4: Strongly agree	4	6
3: Somewhat agree	16	14
2: Do not agree	47	35
1: Do not agree at all	26	38

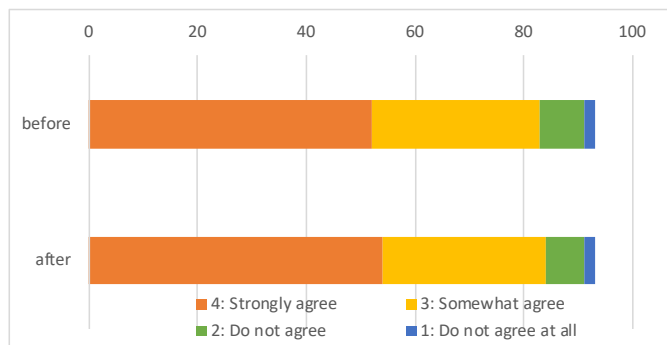


Q09-1 It is important that inventions and designs be protected

Survey items	before	after
4: Strongly agree	41	46
3: Somewhat agree	27	23
2: Do not agree	3	1
1: Do not agree at all	2	2

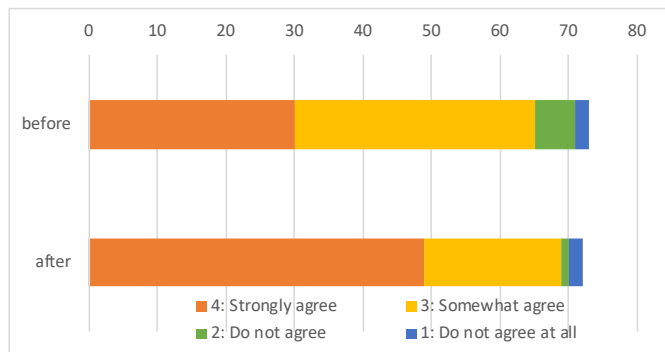


Survey items	before	after
4: Strongly agree	52	54
3: Somewhat agree	31	30
2: Do not agree	8	7
1: Do not agree at all	2	2

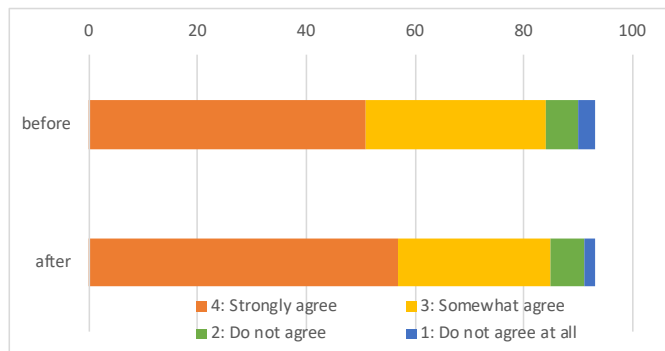


Q09-2 It is important that trademark rights be protected

Survey items	before	after
4: Strongly agree	30	49
3: Somewhat agree	35	20
2: Do not agree	6	1
1: Do not agree at all	2	2

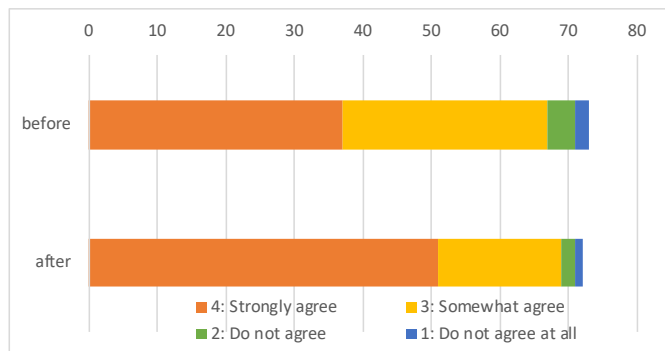


Survey items	before	after
4: Strongly agree	51	57
3: Somewhat agree	33	28
2: Do not agree	6	6
1: Do not agree at all	3	2

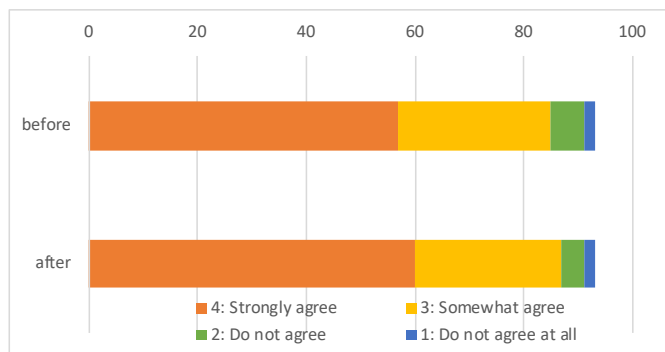


Q09-3 It is important that copyrights be protected

Survey items	before	after
4: Strongly agree	37	51
3: Somewhat agree	30	18
2: Do not agree	4	2
1: Do not agree at all	2	1



Survey items	before	after
4: Strongly agree	57	60
3: Somewhat agree	28	27
2: Do not agree	6	4
1: Do not agree at all	2	2



(Discussion)

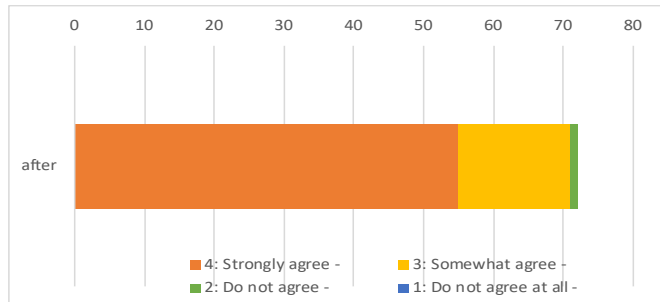
As for the protection of intellectual property, since the spirit of compliance with the law has been cultivated since childhood, there was not much difference between the pre- and post-survey totals for "4. Strongly agree" and "3. Somewhat agree". There was, however, a significant difference for "4. Strongly agree" and "3. Somewhat agree" at the regular high

school level. The number of "agree" only shows an increase, which is thought to be due to the fact that awareness regarding the importance of intellectual property and compliance with the law has increased—especially among regular high school students, who have been exposed to the reality of intellectual property.

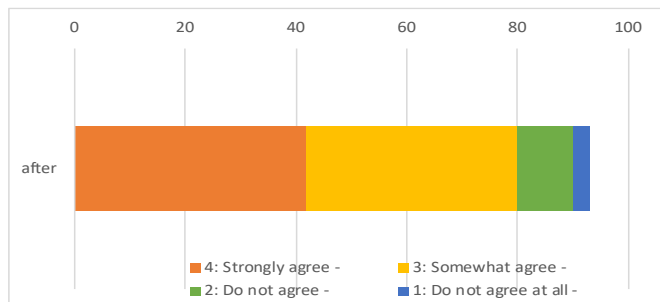
(ii) Post-lesson interest in intellectual property stimulated via teaching materials

Q13 Learning about intellectual property was interesting

Survey items	before	after
4: Strongly agree	-	55
3: Somewhat agree	-	16
2: Do not agree	-	1
1: Do not agree at all	-	0

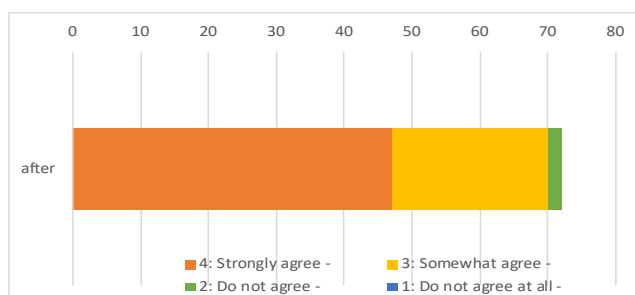


Survey items	before	after
4: Strongly agree	-	42
3: Somewhat agree	-	38
2: Do not agree	-	10
1: Do not agree at all	-	3

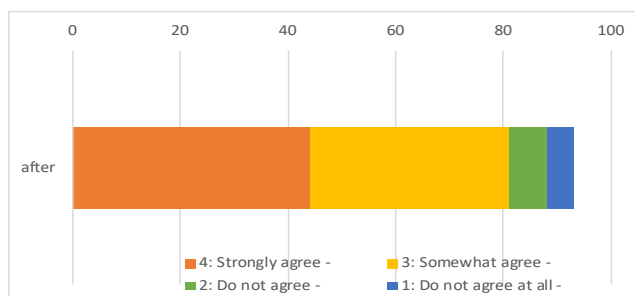


Q14 I found intellectual property interesting because it dealt with familiar products

Survey items	before	after
4: Strongly agree	-	47
3: Somewhat agree	-	23
2: Do not agree	-	2
1: Do not agree at all	-	0

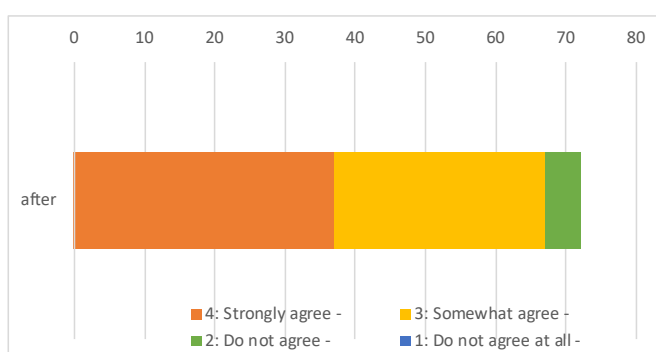


Survey items	before	after
4: Strongly agree	-	44
3: Somewhat agree	-	37
2: Do not agree	-	7
1: Do not agree at all	-	5

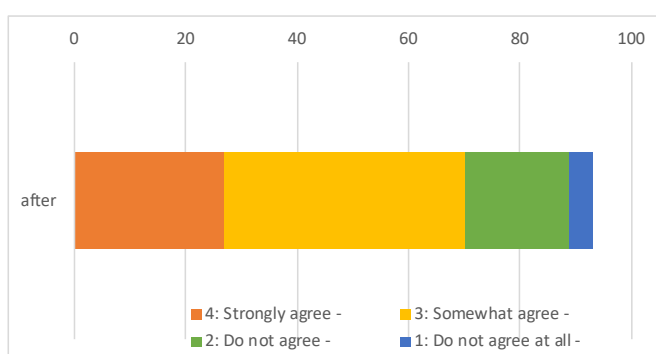


Q15 I would like more time set aside for us to come up with our own ideas

Survey items	before	after
4: Strongly agree	-	37
3: Somewhat agree	-	30
2: Do not agree	-	5
1: Do not agree at all	-	0



Survey items	before	after
4: Strongly agree	-	27
3: Somewhat agree	-	43
2: Do not agree	-	19
1: Do not agree at all	-	4



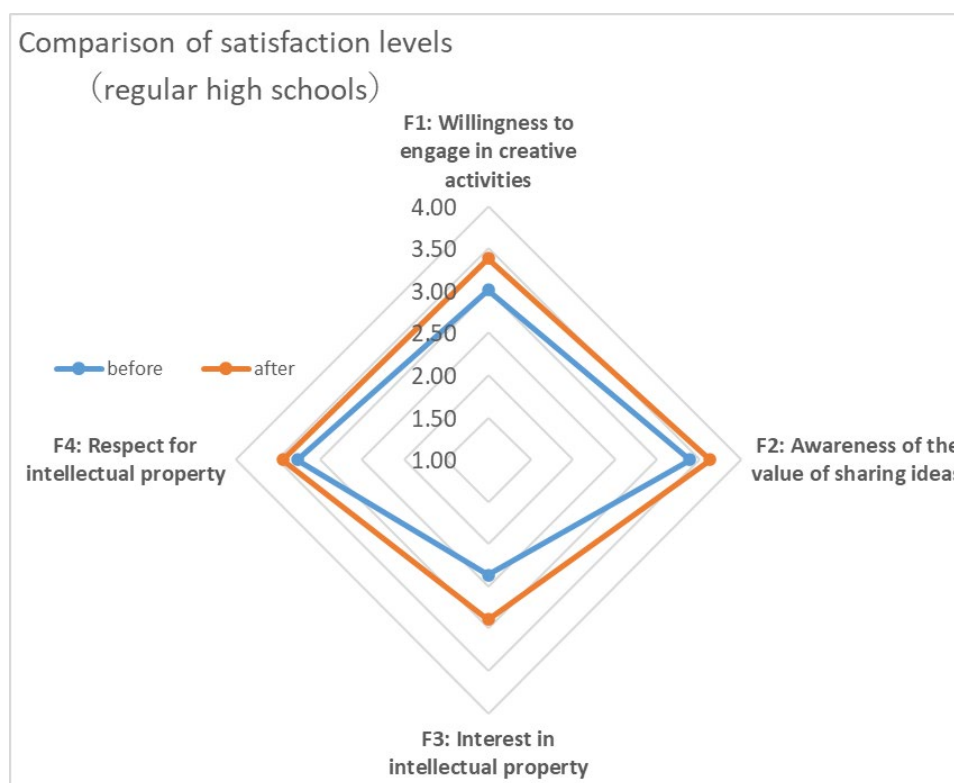
Conducting demonstration lessons via this project has had an extremely positive impact on the awareness of intellectual property at regular high schools. This can be attributed to the facts that the “How to Explore Ideas” materials used in these lessons are easy for teachers to use and that teachers prepared and used supplementary teaching materials (resumes) and worksheets to make the material easy to understand for students.

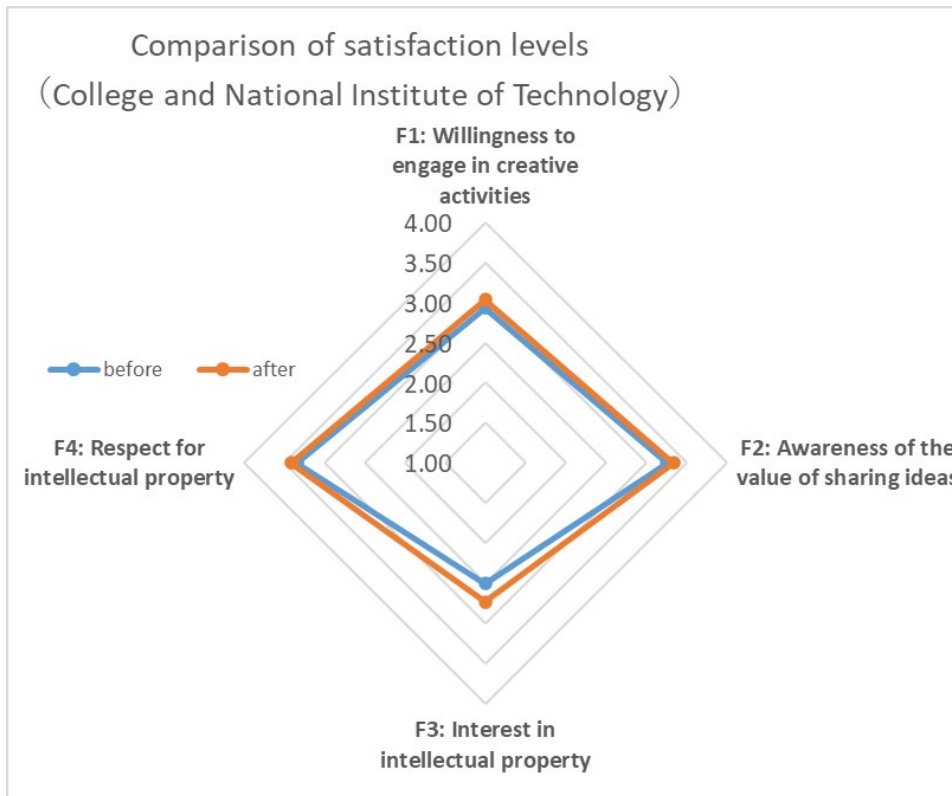
Intellectual property education may already be included in the curricula of College and National Institute of Technology but, by using "How to Explore Ideas", instructors can offer lessons that differ from their conventional approaches, leading to the majority of students taking a greater interest in the intellectual property rights surrounding familiar products.

(3) Comparison of average scores of F1 to F4 in regular high schools and Colleges from National Institute of Technology

F1: Willingness to engage in creative activities, F2: Awareness of the value of sharing ideas, F3: Interest in intellectual property, F4: Respect for intellectual property

*The responses to Q7 (My day-to-day life would not be disrupted even if intellectual property rights were not protected) , which is included within F4 (Respect for intellectual property), differed from those of the other questions insofar as the rating for 1 (Do not agree at all) was at the top of the scale, resulting in back-calculation of the figures ("1: Not at all" gets 4 points, "2: Not very much" gets 3 points, "3: Fairly well" gets 2 points and "4: quite a lot" get 1 point).





(Discussion)

Comparing the average scores of the responses from F1 to F4 between the pre- and post-responses, it can be seen that, especially in regular high schools, F1. The the willingness to engage in creative activities (F1) and interest in intellectual property (F3). shows a significant increase in interest in intellectual property, especially in regular high schools. The students also gave very high evaluations of the classes. This, which indicates that the class it was highly effective in cultivating imagination and raising awareness of intellectual property, and that the students were highly satisfied with itwith the class.

IV. Updates to teaching materials and instructor guidebooks

1. Updates to teaching materials

There does not appear any need to update these teaching materials but they do need to be adapted to high school students whose needs are becoming more diverse and complex year by year, so we believe it may be necessary at times to add new examples besides Chicken Ramen™ and Cup Noodle™ in line with the interests, characteristics, etc., of the high school students taking the course in order to respond appropriately to frequent institutional revisions and provide accurate information. Examples that should be newly added might include innovations that bring about major historical and social changes and are manifested in international businesses and projects. In particular, it would be a good idea to introduce the Cabinet Office's 5th Science and Technology Basic Plan as a means of encouraging the transition to Japan's vision of a future society and discovering the challenges to be addressed in realizing a new society.

Specific new examples include the following:

- (1) Smartphones
- (2) The Internet
- (3) Blue light emitting diodes (LEDs), white LEDs
- (4) iPS cells
- (5) Shinkansens
- (6) Home video game consoles/software
- (7) Hybrid cars/ electric cars

We also think that it is necessary to add exercises. New examples should be added as necessary in keeping with the interests and characteristics of the high school students who are taking the course. Exercises developed from case studies of innovation might be added to the teaching materials to foster imagination and creativity.

The 6th Science, Technology and Innovation Basic Plan advocates promoting entry-level education and developing human resources capable of supporting a new society to contribute to comprehensive understanding and problem solving through "integrated knowledge" that fuses the natural sciences with the humanities and social sciences, and it would be a good idea to look back on one's own high school days to discover problems and solutions. Exercises should be added not only to foster imagination and creativity, but also to deepen knowledge about intellectual property.

2. Updates to instructor guidebooks

The teaching materials had just enough content but, since there were few lesson examples, specific additions were made to make lessons easier to conduct. With regard to time allocation in particular, worksheets and other supplementary teaching materials with easy-to-imagine scenarios were also incorporated to illustrate how lessons should be organized from the viewpoint of the lesson goals.

V. Recommendations on utilizing teaching materials and instructor guidebooks

The takeaway from the demonstration lessons was that the teaching materials are very useful in teaching intellectual property rights. The work sections providing hints as to what kinds of issues to have students think about were particularly well-received. The mainstay texts currently used in intellectual property education for high school students are "Industrial Property Rights Standard Textbook" and "Intellectual Creation Activities and Intellectual Property", but it was shown that our teaching materials can also be put to general use.

The lessons conducted at Colleges from National Institute of Technology presumed the students had some knowledge of intellectual property rights, so the differences between the pre- and post-lesson surveys were not so apparent. However, intellectual property education began at these colleges earlier than at regular high schools, so knowledge about intellectual property rights had been disseminated to a remarkable degree prior to the lessons.

In this experimental lessons, many teachers/instructors created supplementary materials while using the teaching materials themselves as the core. While it seems possible to some extent for teachers who have conducted IPR classes before to create supplementary materials, it is possible to imagine difficulties in the case of first-time classes, so we revised the guidebook to include variations of this experimental class. By including three examples of lessons, we thought it would be possible to encourage anyone to implement IP education lessons.

Since it was demonstrated that the level of intellectual property education for Japanese high school students can be raised by ensuring these teaching materials and the revised teaching notes are more widely known and utilized, we recommend that such education be disseminated to more regular high schools in light of the effects of continued use of these materials ascertained from the questionnaire surveys and interviews.

FY2021

Research on the review and improvement of the use of teaching materials for the promotion of intellectual property education for youth

March 2022

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