Program of Continuing Professional Development for Geotechnical Engineers by Japanese Geotechnical Society

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ABSTRACT: Japanese Geotechnical Society (JGS) has established two committees for Continuing Professional Development (CDP), on recognizing the importance of the CDP of geotechnical engineers. One is "Committee of Engineer Education," which mainly focuses on strategic policy of CDP from long-term point of view. The other is "committee for GCPD system," which involves two aspects, one for daily activities such as the maintenance, the grand up of operating system and database; the other is the cooperative actions with other related societies. In this report, review on past actions of those committees and the future plan will be introduced in detail.

1 INTRODUCTION

Japanese Geotechnical Society (JGS) has established two committees for Continuing Professional Development (CDP), on recognizing the importance of the CDP of geotechnical engineers. One is "Committee of Engineer Education," and the other is "committee for GCPD system." In this report, review on past actions of those committees and the future plan will be introduced in detail.

2 ACTIVITIES OF THE COMMITTEE OF ENGINEER EDUCATION

2.1 *Background*

The Committee of Engineer Education has begun its activities since 1999. The aim of the committee is to discuss the strategic policy of CDP for geotechnical engineers from long-term point of view

Due to fast change of social structure and industrial society, requirement for the change of engineers in the fields of their responsibility, capability and social status will also occur. In order to catch up with the change, Prof. Osamu KUSAKABE (Tokyo Institute of Technology), the chairperson of 2nd Committee of Engineer Education, proposed a life-span educational program, that is, 1) initial professional development (IPD), 2) qualifying professional development (QPD) and 3) Continuing Professional Development (CPD), according to three different professional development categories of a engineer.

2.2 *Appropriate education of engineer*

It is no doubt that civil engineers and construction engineers will become excessive in near future due to the change of social structure and industrial society, which, as a very important factor, should be considered in the life-span educational program for engineers.

First of all, we should give a definition for the rule of well-behaved engineer. The committee has defined it as follows: "An engineer should work for commonwealth of human society enthusiastically and take his/her responsibility while enjoy his/her privilege. Meanwhile, he/she should also be able to judge circumstance condition and choose an optimum solution to any problem by understanding the relationship between his/her specialty and other fields on the turning point of engineering sense of value."

The contents which should be considered in the education of engineer are as follows;
(1) Training of fundamental academic knowledge of specialties
(2) Development of the ability to find out problems and solve them independently
(3) Training of ability in expression and communication
(4) Understanding commonwealth, social responsibility and cultivation of ethic

The above-mentioned contents should be offered not only by universities and other institutions of higher education, but also by professional education system such as the Continuing Professional Development.

2.3 *Three professional development categories*

2.3.1 *Initial professional development (IPD) by university*

In recent years, many students lost their interest in geotechnical engineering which may result in a serious problem of lacking able engineers in the field of geotechnical engineering in near future. Institutions of higher education should be regarded as a part of curriculums of the CPD for engineer. In engineering faculty of each institution, individual educational curriculums as a part of continuing education of engineer which fits the aim and requirement of each institution should be stipulated. In order to educate young geotechnical engineer, not only soil mechanics should be studied by students, but also case studies and other attractive tools for lectures should also be prepared properly. Meanwhile, an overwhelming collaboration system among industry, academia and government in education is necessary, in which, JGS can provide a valuable suggestion to make attractive teaching materials based on its abundant experience.

2.3.2 *Qualifying professional development (QPD)*

It is important for QPD activity that engineers should study based on their own wish and independently. Academic societies, government and companies should support the action to let engineers to raise their level so that engineers can work independently in international affairs. They should then recognize the activities of the engineers who have completed educational program and reached the required level and support the engineers to step forward to CPD activity.

2.3.3 *Continuing professional development (CPD)*

It is basically the same as QPD activities that engineers should study based on their own wish and independently in CPD activities while academic societies (e.g. JGS) support the activities by supplying information and opportunities for the education activities. For this reason, it is necessary to activate existing programs of training courses, cooperate with universities and companies in joint reeducation programs, support the activities of NGO related to CPD program. Furthermore, apart from the geotechnical engineering society, we should also cooperate with other societies such as the Institution of Professional Engineers, Japan, in providing the necessary information about foreign technology and communication with foreigner engineers to enhance the supporting system.

2.4 *Suggestion of seven detailed programs for CDP curriculums*

In the second Committee of Engineer Education, the strategic policy of CDP for geotechnical engineers from long-term point of view is discussed in detail and curriculums for CDP, qualifying professional development (QPD) and initial professional development (IPD), was proposed according to these three professional development categories.

The curriculums consist of seven CDP programs as follows:

Program 1) Enhancement of multimedia educational contents

Program 2) Supporting system for internships by industry-academia-government collaboration

Program 3) Supporting system for research activities in bachelor thesis by industry-academia - government collaboration

Program 4) Supporting system for Education of engineers who can work independently in international affairs

Program 5) Lecture for proficiency of test of engineer

Program 6) Supporting system for exchanging ideas of engineers from different engineering societies

Program 7) Supporting system for NPO actions of the member from JGS branches in cooperating with civilians

Programs 1-3 relate to the activities of IPD. Program 2 can be regarded as a supporting system of internships executed under the collaboration of industry, academia and government, by which, it is possible for students and young engineers to understand the importance of working for commonwealth, taking social responsibility and cultivation of ethic. It is also possible for them to get the information and master the skill to communicate with engineers from other societies.

Program 3 can be regarded as a kind of recruitment for theme of bachelor thesis from industry, local area and government. Through research activities based on the theme, students can experience the professional responsibility, master the skill for solving problem and understanding the necessity to contribute to social welfare. JGS can provide the field for exchange of information and coordinate the activities.

Programs 4-6 relate to the activities of QPD. Registered Japan Consulting Engineers can work in ten economies (Japan, Australia, Canada, Hong Kong, Korea, Malaysia, New Zealand, Indonesia, Philippine and Unite states) if they register APEC Engineer according the mutual acceptance program. For this reason, it is necessary to consider the QPD program in an international view point. In Programs 4, the following detailed subjects are included:

- Establish a mutual acceptance system for the

QPD program among geotechnical engineering societies of APEC countries.

- Establish a constant committee by which it is possible to held symposium and meeting discussing how to solve practical problems about the design and construction in geoengineering.
- Establish a data base for mutual changing information mainly by JGS, cooperated with other APEC countries, to support the internationalization of young engineers.

Program 7 relates to the detailed activities of CPD, by which it is possible to raise the fame of JGS activities that may directly result in a wide understanding of public civil engineering projects and increase of successor of geotechnical engineer. The activities of CPD include the following aspects:

- The activity that can keep all engineers to be a responsible person for society
- The activity to support engineers to continue studying by themselves
- The activity that can enhance the intimate relation between engineer and civilians
- The activity to enhance the understanding from civilians on geotechnical projects in which development of new technology is absolutely necessary.
- The activity to ensure the continuity and corelation of educational subjects among young engineers to senior engineers.

In the 3rd committee, in which Prof. Atsushi Iizuka was the chairperson, the plan mentioned here was discussed and the Programs 2, 3 and 6 were taken as the main subjects needed to be dealt with. In order to enhance the collaboration between industry, academia and government, a committee called propaganda committee of industry-academia-government collaboration was established. In 2004, three committees, that is, CPD, Education of Engineer and propaganda committee of industry-academia-government collaboration were established at all. In 2005, a special session between JGS and other Societies was also started in JGS annual meeting to shear the information and progress in geotechnical engineering field. In order to let Program 5 to develop, a committee for the spread of technology was established. The detailed activities are referred to in Furuya and Iizuka, 2008.

In the 4th committee, in which Prof. Makoto Kimura was the chairperson, 7 programs were arranged according to 4 categories (Fig. 1).

In the 5th committee, in which Prof. Masaki Nakano is the chairperson, Programs 4 and 7 are emphasized. Especially for Programs 7, the succession of technology, the rising of engineer's status and contribution to society are being discussed intensively and their key word can be listed as follow:

- Succession of technology and skill by "premium membership"
- Review of historical heritage of civil engineering and geotechnical engineering structures
- Knowledge note and Knowledge succession by e-learning method
- Training course and project sightseeing faced to civilians

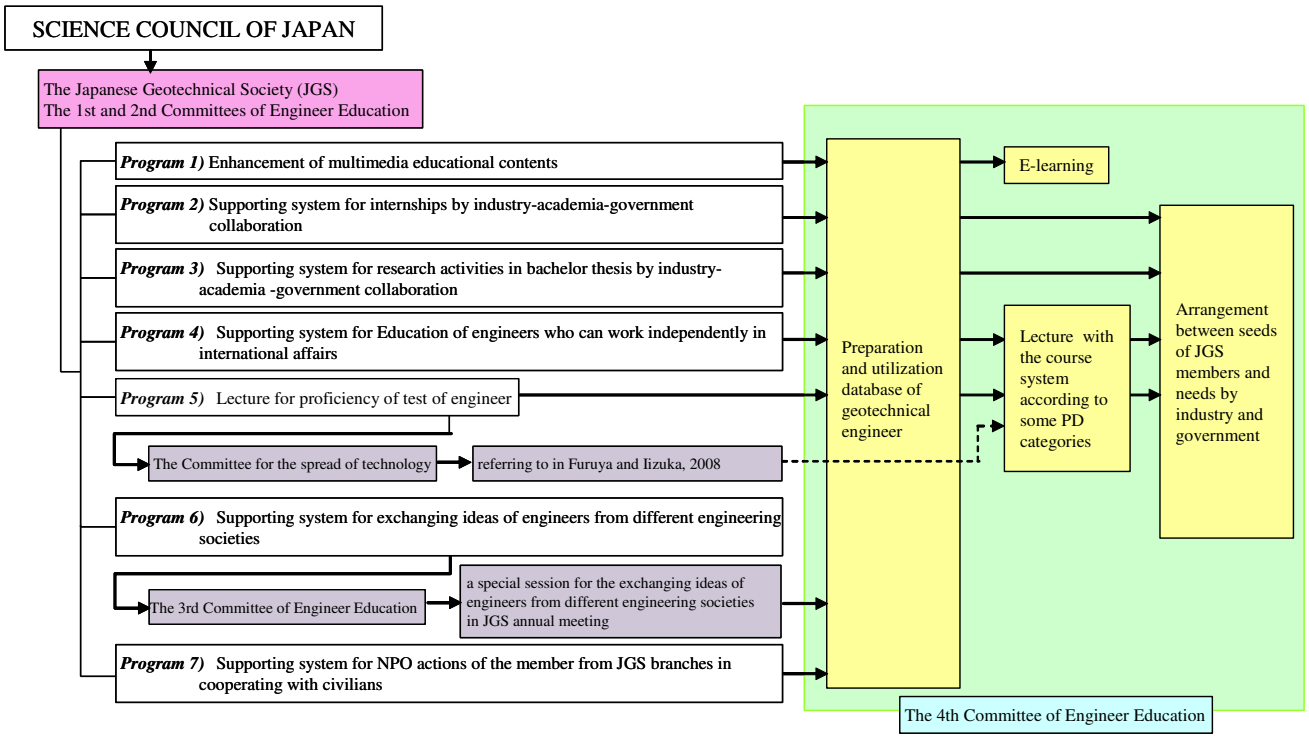

Figure 1 4 categories arranged from 7 detailed programs for CDP curriculums (from 1st committee to 4th committee)

3 GCPD SYSTEM- ACTIVITIES OF THE COMMITTEE OF CDP EXECUTIVE SYSTEM

3.1 *Objectives of GCPD committee*

GCPD is a continuing professional development program in Japanese geotechnical society. The committee for GCPD system was established as one of the branch committees under Japanese geotechnical society in 2001. The initial aims of the committee were to make regulations concerning GCPD and to establish information systems for GCPD, one of which was a website for GCPD members and the other an information system of GCPD point account like a frequent flyer program provided by some airline company. The committee is now actively operating to improve these systems, promote the CPD activities to all the members of the society and develop favorable circumstances for CPD.

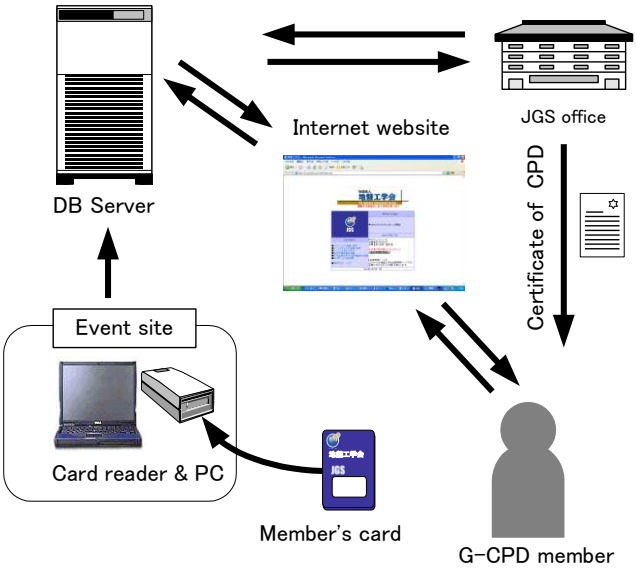

Figure 2. CPD system in JGS

Figure 3. Website of GCPD

3.2 *GCPD point*

When a geotechnical engineer of GCPD members spends an hour in a certified training for CPD, he/she can acquire one GCPD point. This acquired point is semi automatically accumulated in his/her GCPD point account using the GCPD system as shown in Fig. 2. An example use of the system will be explained as follows.

A member of GCPD can choose a workshop to attend from a list of workshops put on the website of GCPD as shown in Fig. 3. In a site of the chosen workshop, there is a card reader set up, and he/she can register the attendance by swiping his/her magnetic membership card through the card reader. The acquired GCPD points are accumulated in his GCPD point account on a database server. He/She can check his/her account history on the GCPD website and also request the JGS office to issue a certification form of his/her acquired points. An example of the certification form is shown in Fig. 4.

The accumulated GCPD points are usually used to retain some qualifications as a professional engineer. These days, the points are being introduced as one of assessment items for public works tender.

G-CPD

No. of member:8500874

Naoaki Suemasa

	2007	2006	2005	2004	2003
Points	82.5	293.4	235	101.5	155.5

Cat.		Contents	2007	2006	2005	2004	2003
I	1	Sympojium	0	24	32	7	21
	2	Workshop	2	1	0	0	0
II	3	Presentation at JGS	0	0.4	0	0	0
	4	Presentation at others	0	0	0	0	0
	5	Full paper	0	20	60	40	0
	6	Other paper	40	85	100	50	70
III	7	OJT	0	0	0	0	0
IV	8	Chairperson	0	0	9	4.5	4.5
	9	Conf. Lecture	0	0	0	0	0
	10	Training lecture	0	0	0	0	0
	11	Head of invest. team	0	0	0	0	0
	12	Review	0	120	20	0	40
V	13	Outstanding work	0	0	0	0	0
	14		0	0	0	0	0
	15	Patent	0	0	0	0	0
	16	Awards	0	0	0	0	0
VI	17	Qualification	0	0	0	0	0
	18	Chair of committee	16	0	0	0	0
	19	Member of committee	24.5	43	14	0	20
	20	Global cooperation	0	0	0	0	0
	21	Damage investigation	0	0	0	0	0
	22	Invited paper	0	0	0	0	0
	23	Self-learning E-learning	0	0	0	0	0
	24	その他Others	0	0	0	0	0

Figure 4. An example of certification form

3.3 *Category of GCPD*

Activities appreciated as continuing professional development are categorized into 6 groups according to contents of the activities, as shown in Table 1. Table 1 shows case load ratios of categorized groups to all

activities registered in 2007 fiscal year. Activities of writing articles and making presentations, categorized in group 2, accounted for 40% of all cases, which had the highest percentage. It was followed by activities of attending workshops and symposiums in group 1. Committee work including attendance at committees under JGS and writing the JGS standards and reports is also appreciated as CPD activities. Although the percentages were low, reviewing papers and guiding technical tours in group 4 and awarding prizes in JGS in group 5 are recognized as one of CPD activities. Training in corporation cited in group 3 can be appreciated if the training is accredited by the GCPD committee from the evidences submitted from the company. The percentage of training in corporation is now slightly increasing as it is a rare chance to get GCPD points for remotely situated companies, for which it is hard to attend workshops held in urban areas in most cases.

Table 1. Category of CPD

Cat.	Contents	Case load	%
1	Workshop & symposium	4390	31
2	Articles & presentations	5766	40
3	Training in corporation	0	0
4	Technical guidance & review	1055	7
5	Awards	23	0
6	Committee work & Others	3091	22

3.4 *Current situation of GCPD*

Figure 5 shows distribution of accumulated GCPD points counted in 2007 fiscal year. About 14000 members had acquired zero point and/or didn't take part in the GCPD program. It is absolutely needed to enlighten these members about the necessity of the continuing professional development and inform them of the GCPD program.

More than 50 points are recommended as the number of accumulated points throughout a fiscal year. The percentage of members whose points acquired exceeded the recommended number was still 20% of total number of members participating in the GCPD program. As mentioned before, the CPD points became one of the assessment items for public works tender though there were a few cases when the assessment system was applied for public projects. With this a turning point, it is expected that the number of members actively working on the CPD will increase.

3.5 *Circumstances surrounding GCPD*

The CPD consortium in construction engineering societies and associations was established in 2003. The consortium is now made up of 13 societies and associations, including Japan society of civil engineers and architectural institute of Japan. Japanese geotechnical society is also a founding member of the consortium. A schematic diagram of the consortium composed is shown in Fig. 6. The main aims of the consortium founded are to make mutual authentication of CPD point, arrange interoperable environment of information system and collect and share workshop information. It is expected that they will lead to upgrading members' convenience and reducing the cost of service charge to maintain the information system for the societies.

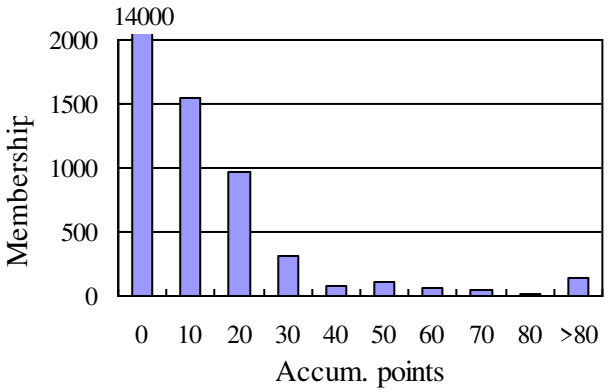

Figure 5. Distribution of accumulated CPD points

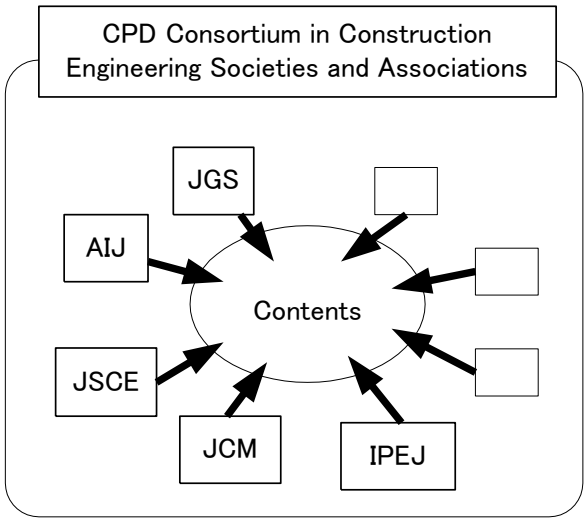

Figure 6. Outline of the consortium in construction engineering societies

The Japan federation of engineering societies, founded in 1879, is the incorporated organization consisting of over 100 engineering societies. Recently, by putting the JFES in a core agency, a huge CPD alliance throughout lots of engineering societies has been organized as shown in Fig. 7. Although it will take a long time to fly the system of this huge alliance off, the alliance can make it possible to manage the CPD program efficiently and cost effectively.

Adapting better to changing circumstances surrounding CPD, GCPD system will make progress to provide all the members with better environment for CPD.

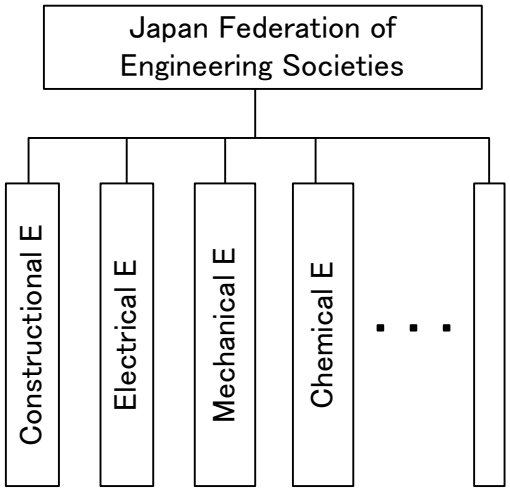

Figure 7. Framework of CPD alliance

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