

Study Group on Development of Highly Skilled ICT Professionals—1st Meeting
Summary of Minutes

1. Date and Time

Wednesday, September 19, 2007; 14:00–16:00

2. Location

Conference Room 901, MIC

3. Attendees (honorifics omitted)

(1) Study Group Members

Muraoka (chair), Ishijima (vice chair), Oba, Kitagawa, Saito, Sakuma, Shigeki, Dairiki, Harasawa, Onishi (proxy: Kanzaki), Nakajima (proxy: Nomura)

(2) Observers

Takahashi (Director, IT Office, Cabinet Office), Fujiwara (Director, Technical Education Division, Higher Education Bureau, MEXT), Yahiro (Director, Information Services Industry Division, Commerce and Information Policy Bureau, METI), Ueda (Manager, Information Group, Industry Section II, Japan Business Federation) (proxy: Tajima)

(3) MIC Representatives

Nakata (Director-General for Policy Planning), Matsui (Deputy Director-General), Suzuki (Director, General Policy Division), Matsukawa (Director, IT Utilization and Human Resources Development Division), Monma (Director, Innovation Strategy Division), Ohara (Deputy Director, IT Utilization and Human Resources Development Division)

4. Meeting Proceedings

(1) Opening

(2) Greeting by MIC (Nakata, Director General for Policy Planning)

(3) Introduction of study group members

(4) Outline of the study group meetings

The Secretariat explained Document 1-1.

(5) Election of the chair and the appointment of vice chair

Muraoka was elected as chair. He appointed Ishijima as vice chair.

(6) Disclosure of this study group's meetings

The Secretariat explained Document 1-2 regarding disclosure of this study group, and it was approved.

(7) Agenda

1) Current status and issues regarding ICT human resources development

The secretariat explained Document 1-3, and questions were taken. The contents of the discussion are summarized below.

- There is research indicating 95.3% of software engineers do not think they will be able to work in field of IT for their entire career. Unlike medical doctors, engineers in IT and engineering might be forced to leave these industries if more refined skills are sought. We must give this point serious consideration if we want to ensure this industry is attractive.

2) Ministry representatives explained the activities of their respective ministries based on “Activities by the IT Strategy Division for the Development of Highly Skilled IT Professionals (Cabinet Office) (Document 1-4), “MIC’s Activities for the Development of Highly Skilled IT Professionals (MIC) (Document 1-5),” “Outline of the Program for Promoting Leading IT Specialist Development (MEXT) (Document 1-6),” and “Aiming at the Development of Highly Skilled IT Professionals (METI) (Document 1-7),” respectively. This was followed by a discussion. The contents of the discussion are summarized below.

- While technical skills are important for IT, it might be necessary to discuss noncomputer-related training, including elementary and secondary education. Is it possible to have a discussion on whether or not there are any other elements that should be included in noncomputer-related training specifically aimed at ICT workers? If so, what are they?
- I have heard from people in architecture that it is important to get basic training not related to computers before learning CAD. In other words, learning how to draw by hand before learning CAD.
- It seems to me that education in computers these days is tantamount to telling students to go play with commercial software. Even if we had a supercomputer available to elementary and secondary schoolchildren, we might not have the teachers to instruct them.
- Elementary and secondary education is important, but we need to discuss these issues by looking at education as a whole.
- As we take radical steps to strengthen the fundamental education, we will need workers with the ability to keep up with the latest technology as well as develop it. Issues related to English must be resolved.
- We should first determine who the targets of this development scheme are. The scope should not be too narrow because ICT will become the foundation of all industries—manufacturing, financial industry, medical and welfare, for example—and we want ICT workers in all of them. Out of the IT engineers we already have, we must retain the top-level, globally competitive people.

- Dialogue between industry and academia has not dealt with this point, which is why the two sides are always misunderstanding each other.
- Eliminating problems with mismatched supply and demand in regard to highly skilled IT professionals in industry by 2010 would seem to be an impossible task. If we are to develop top-level professionals in academia and industry, we must think long-term, like over 10 years. We must also think about how to create the right environment and provide the teachers and equipment that will allow us to realize the plan. The Hasso Plattner Institute (HPI) in Germany educates their students using the concept of 80% soft skills and 20% technical skills.
- While we have a common awareness of the issues of developing teaching materials and a framework, we need able instructors to attract students. It is also important to think about how to improve incentives and motivation to get university faculties to provide better practical training and how to get people working in the field to perform well as lecturers. Taking a long-term view, the development of teaching professionals is very important.
- From an industry point of view, developing top-level engineers is important. However, another issue is that those people have not been able to perform in the global arena. Before we get on to the language issue, we need people who are able to perform in the global arena by using their soft skills, such as the ability to communicate well with a variety of people and to engage in teamwork. However, it takes long time to turn Japanese people into global players. So for now I would like the idea of creating an environment wherein top-tier foreign engineers can be brought in to support the Japanese industry to be included.
- First of all we must have detailed discussions on characteristics we want highly skilled ICT professionals to have. If we want people who can think in terms of computers as a societal tool, we would need people who are well versed in a wide range of both science and humanities subjects and have a broad knowledge of products and markets. If we are looking for world-class professionals, they would need to be highly specialized in a certain field. It might be difficult to find all of this in one person. To begin with, we should discuss what kind of people we want and how many.
- If we try to put everything on the shoulder of a single person, things will breakdown. We should think about skills and combinations of skills needed within particular organizations and the amount of work those people can do. This kind of approach is essential.
- Employees in an ICT company's systems department need IT capability, business knowledge and the ability to work in a team. We are not expecting university graduates to be equipped with all three when they graduate from university. The specific business knowledge required is different in each industry and teamwork skills can be acquired

within the company. It seems that the role of universities should be to provide IT capability. In particular, companies want employees who want to work in IT. The companies can then train those employees, provide them with a career path and improve rewards. Industry needs to have a good supply of people who are interested in IT and have clear objectives in mind.

- Project Based Learning (PBL) can be eye-opening, but we must first realize that students lack basic academic skills, knowledge and understanding of technical aspects. Some join engineering faculties because they are strong in science, but then go to work for a consulting firm because they don't think that they can develop systems and mobile phones themselves. It is important for industry to indicate what its needs are so students know what they should study to be employable.
- From the point of view of companies, they need people who are good communicators and can work well with people in different fields. In other countries, it's the people who have a good understanding of whatever culture they are in who get the jobs, and we need Japanese people who can go overseas and teach. However, regardless of nationality, we need people who can improve the competitiveness of Japanese companies. We need to think about how to create such a mechanism within the industry. Perhaps we need to think about developing workers in relation to industrial policy rather than education.
- How can we create an environment that will foster the development of students who will go on to be Japan's future leaders, and where students are allowed to study the basics at university when they realize that that's what they need? For example, it is impossible to meet the needs of every single person in a national institution. It is impossible to create such an environment in all universities within the framework of standardized university education. As we think about our own university system, we must compare it with the environment provided in the United States, Europe, South Korea and China or we may fail to achieve our goals.
- One problem is that students are not learning what they should be learning in undergraduate education. Students should be learning negotiation skills, presentation skills and English at the undergraduate as well as graduate level. Elementary and secondary education also comes into it. We encounter problems such as the inability to read contracts and manuals or to arrive at logical conclusions, writing specifications that require readers to read between lines and creating systems that customers did not ask for. We must do something radical, like dividing Japanese language education into two areas: the emotional aspect and the logical aspect.
- It is also important to have a mechanism that allows industry to dispatch willing people to educational institutions.

- The government should provide funding to create a mechanism for improving motivation and providing incentives to workers, rather than funding specific individual measures. Students who have put a disproportionate amount of lot of effort into their studies who are hired together with all the other new employees, with the same salary and having no say in what area they are assigned, to will lose motivation for further study. This problem is largely caused by the employers. In case of the United States, companies can hire people for specific positions because the quality of the students can be assured from their grades and the university that they graduated from.
- One of the reasons the IT industry has turned into a “3K” workplace (*kitsui*, meaning hard, *kitanai*, meaning dirty, *kiken*, meaning dangerous) is the practice of pricing based on man-hours. Industries that buy based on outcomes or products rather than on cost have improved productivity and quality and companies within them can educate their employees and offer high salaries to high-performers. The brightest students will naturally want to work in these industries.
- We must expand the pool of workers by making computer studies compulsory in engineering-related majors in the same way as English and physical education.
- Would it be possible for universities to allocate 10% of procured funds to companies that employ their graduates for education and training? If the government assesses the companies’ performance regarding human resources development, they might try harder.
- I would like this discussion to be focused, so that we know whether we are shooting for the upper part or the lower part of the engineer pyramid.

(8) Next step

The schedule (draft) was explained.

(9) Meeting adjourned.