

Title: Japanese New Challenges to Regenerate its Educational Culture  
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Abstract:

We are entering the era of innovation.

Keeping competitiveness in science, technology and education system is a key for the new era. A new thought on these fields is badly needed.

Japan was known to have its excellent innovative capabilities up to the end of 1980. However, since then, Japan lost its advantages drastically.

Firstly, I would like to discuss how Japanese has tried to re-vitalize its innovative capabilities so far. Yes, Japan has done to a certain extent: Some of them are enforcing a new science & technology basic law, setting up a new Prime Minister's committee for comprehensive science & technology policies, revising intellectual properties, doubling governmental funds for basic research, giving new incentive for researchers, introducing new tax incentive system to foster university-industries collaborations, privatizing national universities, and so on.

Secondly, I would like to examine "Are they enough to change present Japanese educational system so that it can re-gain its innovative capabilities again?" As stated above, it has been done to a certain extent, but it is not enough. Some concerned Japanese are discussing more in deep, inner type of changes badly needed. And, I would like to discuss on a new education system based on the above mentioned.

(Background paper)

The Case of Japan

It is my intention to elucidate what is expected of us researchers and policy-makers for an education system in the face of the engulfing (gathering) waves. Before doing so, however, it is appropriate to trace the track record of Japan in this regard. The exercise should be helpful in bringing to light the trials and errors of our colleagues.

During the last 150 years Japan shows its huge innovative capabilities shown Fig.1. That is the real reason that Japan, such a tiny country without any resources, has enjoyed the second largest economical power in the world. Japan had shown its genuine capabilities when Commodore Perry visited of 1853. Within 13 years the Edo period had been converted into a new period called Meiji. Economist Lawrence Klein has analyzed that Japan had grown annually 4 percent its GDP since then. Japan was defeated completely at the WWII, but that war did not destroy its innovative capabilities. Actually, after 1950 and for the next three decades, the country as a society continued to record a two-digit growth. Today, the same kind of innovative capabilities have been seen in BRICs and some Asian countries such as Korea and Singapore. In fact, Japan had been advancing rapidly since the Meiji Restoration and a century later had more or less caught up with the industrialized countries, so its continued innovative capabilities were even historically notable. What followed was even more spectacular. That is, after the bubble burst at the end of the 1980s the society lost its momentum at an unthinkable speed.

This applied equally to Japanese research and education system. For example,

reports filed in the '80s promised Japan a top place in many of the research fields in the coming century but that was not to be, as it quickly lost the innovative capabilities it had acquired.

Japan did not remain idle as may have appeared to outside observers. The seriousness of the situation had come to the attention of some, if not all, Japanese by the end of the '80s. It was acknowledged among government officials, scholars, politicians and business leaders, some sooner, some later, who tried their level best to stir up a sort of national response to the impending crisis.

Let us review for a moment how they analyzed the loss of capabilities of their research and within their business organizations. It should be noted at the risk of being misunderstood by outside observers that a plethora of causes were identified--but mainly the lack of official commitment to science, technology and education system manifested as wanting in policies in these fields.

To be sure, even then investment in research and development continued to grow steadily. But the increase came from the private sector's research and development budget, while the government contribution dipped near twenty percent, lowest among the developed countries shown in Fig2. Policy makers realized that they had been cutting corners and as a consequence funds for basic research were dangerously low. The government for its part neglected to review the legal setup for technological transfer and intellectual property rights. As a result, Japan's research community suffered, reduced to being a free rider skimming the cream off the tables of its rivals. This had in turn resulted in the research institutions losing their dynamism. Few Japanese scientific papers were quoted and fewer yet were awarded Nobel prizes, all of which pointed to the lackluster quality of research.

Their conclusion on its education system is about the same. Japan used to spent huge government educational budget, but what they have found was that budget was cut back to the lowest in the developed countries. As a result, quality of Japanese education system had eroded.

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