

MODES OF INNOVATION AND UNIVERSITY-INDUSTRY LINKAGES

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This paper contrasts three modes of learning and innovation: STI mode (Science, Technology, and Innovation); DUI mode (Doing, Using and Interacting), and combination of the former two - STI+DUI. STI mode gives main emphasis to promoting R&D. This mode alone contributes to the generation of advanced scientific and technological knowledge, mainly associated to analytical processes driven to identify natural principles and mechanisms that can be applied to industries. DUI mode relies on informal processes of learning and experience-based know-how. Much learning, especially of tacit and localized knowledge, is through this mode. It refers to learning on the jobs as employees face ongoing changes that confront them with new problems. The third mode, STI+DUI is expected to combine the strength of the first type of knowledge flow with the second in a way that, on the one hand, generates more scientific knowledge output and, on the other, catalyze stronger interactive practices and exchanges across agents that enrich the knowledge output with adaptations and transformations that also represent innovations.

There is a debate on the most effective innovation profile for firms and their systems. Jensen et al 2007 demonstrates that firms that combine a strong version of science-based learning with a strong version of experience-based learning are the ones that are most innovative. There is a contrary belief that innovation output of firms is in fact more sensitive to STI drivers than to DUI drivers (Parrilli, Elola 2011). This result is quite novel and insightful for both academics and policy-makers as a means to shed further light on the most effective innovation modes.

Lundvall (2007) argues that universities should give long term contributions to knowledge creation and creation of a new generation of graduates who are capable of realizing DUI-mode in innovation process. The learning capability does not only have an instrumental role in development but also substantive value. It enhances the capability of individuals and collectives and contributes directly to human well-being.

The universities need to be seen as an integrated part of the formation of a national system of innovation. They should serve as direct sources for innovation and become creating market-oriented. To achieve this goal most universities should go educational reform including the wide using problem-based and practically oriented learning as teaching method.

University–industry linkages:

- Graduates and highly skilled labor are one of the most powerful mechanisms for knowledge transfer to industry;
- Universities have become important knowledge sources and innovation partners for industry;
- Increasing variety of relationships: R&D contracts, R&D collaborations, innovation partnerships, joint use of facilities, informal knowledge exchange.

The key importance of universities for National Innovation System has still to be seen in the traditional roles of providing highly qualified graduates, doing excellent scientific work, providing basic science and R&D. The key challenge is to interact with industry but keep freedom and diversity of academic research.

References

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