

## Education's contribution to the Dutch innovation system

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The Education Council has already deliberated on the question of the circulation of knowledge on an earlier occasion. In its recommendations *Hogeschool van kennis (College of Higher Professional Education – A Centre for Knowledge)*, published in 2001, the council referred to a number of modes used for the exchange of knowledge between areas of professional practice and educational institutions. The council distinguished nine modalities pertaining to circulation of knowledge: coordination of curricula to meet demand, work experience placements, dual learning arrangements, guest lecturers and secondment of lecturers, monitoring of innovations, counselling and supervision of new entrepreneurs, removal of bottlenecks in the labour market, design and development, and internet-supported circulation of knowledge. The council concluded in 2001 that all these instances of the circulation of knowledge were functional in practice, although a number of aspects were capable of being improved. The circulation of knowledge and the innovation linked to this process is a topic that receives a great deal of attention. The Innovation Platform established in 2003 resulted in further refinements to a considerable number of the points discussed earlier.

The recommendations at hand have a modest aim: they fit within the current debate in the Netherlands regarding the innovation system and present a number of recommendations intended to make education more relevant to this innovation system. The Innovation Platform has indicated its concern that high-quality knowledge already in the public domain currently finds its way inadequately into commercial applications in industry and in society at large. In order to resolve the so-called knowledge paradox (the discrepancy between the availability and the deployment of knowledge), the Dutch innovation system is currently in need of improvement; the term 'innovation system' in this context refers to the entire field of players, such as companies, knowledge institutions and intermediary organisations that are together responsible for the generation and maintenance of knowledge on the use of innovative products, services, production methods and working procedures. This is the essential importance of the Wijffels committee set up by the Innovation Platform (Workgroup for the Dynamising of the Dutch Knowledge and Innovation System) and of the Innovation Platform itself in a wider context.

A number of proposals for improvement have been put forward by the Innovation Platform, including:

- more investment and especially more direct investment in knowledge and innovation, more investment in training and education and in research and development;
- organisational and institutional renewal: ensuring space is provided for those who will initiate and implement innovations (ranging from pupils in schools and employees in companies to researchers in universities); and
- reinforcement of links between the parties, especially between knowledge institutions on the one hand and demand-side parties on the other.

The measures proposed by the Wijffels committee are largely positioned in the area of economic and scientific policy; some also pertain to the field of educational policy.

Seen within the context of the more general question of how education can contribute to a better functioning of the Dutch innovation system, this advice focuses on the reinforcement of concrete links between participating parties (knowledge institutions, commerce and industry and the government). Education is capable of playing a more active role in the reinforcement of these links than it has done up to the present time.

Against this background, the Secretary of State for Education, Culture and Science placed the following questions before the council for advice.

- (1) What different forms of regionally-based innovative knowledge networks currently exist and how are vocational/adult education institutions, higher professional education institutions and the universities positioned within these networks?

- (2) What are the characteristics of regionally based knowledge networks that contribute to the promotion of innovation within educational institutions and other regional institutions?
- (3) How and under what conditions can the government, the regions and the educational institutions support knowledge networks as such, and more particularly the role of educational institutions within these knowledge networks? What policy instruments apply in this field? What internal and external conditions impede or promote the innovative capacities of the networks and the role of educational institutions within these networks?

The council concluded, based on an analysis of networks literature, that many types and forms of networks currently exist. Since there was little knowledge available describing the functioning of these networks, the council commissioned the B&A Group:

- to draw up an inventory of existing innovative networks in which educational institutions play a substantial role; and on the basis of this
- to analyse a (limited) number of networks in more depth and describe these from the perspectives of 'network characteristics' and 'innovative effects'.

A total of 43 networks in which educational institutions currently participate were traced. The data collected included information regarding scope, the organisations participating in the networks and the specific role of the educational organisations in question, their aims and core activities, effective distribution with respect to specific areas of discipline and the innovative character of the networks concerned.

Eight of these 43 networks were analysed in more depth and then described. These networks are generally speaking extensive in terms of scope. Large numbers of parties are involved, mostly representing commerce and industry, knowledge institutions or government bodies. The majority of these networks are extensive enough to embrace a plurality of content-specific sectors (multi-disciplinary) but in cases where a knowledge network is restricted to single sector, this is generally a technological sector, particularly ICT (information and communication technology), other technologies and electrical engineering. Educational institutions that participate in the networks fall under the vocational education and adult education sector, the higher professional education sector and the university education sector. In proportional terms, all the sectors participate more or less equally in networks that aim to bring together knowledge and demand. A description of findings from the specific cases referred to can be found on the Education Council website ([www.onderwijsraad.nl](http://www.onderwijsraad.nl)).

#### *Internal conditions*

Based on the theory of (policy) networks and the analysis data referred to above, five central internal conditions can be identified that are capable of having a beneficial effect on the exchange of knowledge and innovation within networks.

- a common goal/innovation as a strategic choice;
- a broadly based participation (a variety of parties within the chain);
- acquaintance with each other/direct personal contacts (awareness of each other's issues and culture);
- a platform of internal support within the separate organisations; and
- a central coordinating and directive function (for the benefit of progress, cohesiveness, maintenance of contacts and new initiatives).

#### *The role of educational institutions*

In addition to the internal conditions, the specific role that the educational institutions take upon themselves is of crucial importance for the functioning of these networks and the contribution they make in bringing together knowledge and demand in such a way that it results in innovation. Educational institutions maintain their links with a view to implementing their educational tasks. This after all is the main function of the networks under discussion. Maintaining links with a view to innovative or development-related tasks focusing on professional fields and the business community in the role of an active participant, coordinator or even initiator of a network, supporting the first task to a greater or less extent, is something that occurs substantially less often.

The council observes that educational institutions could contribute more to innovative networks than they do at the present time. If the role of educational institutions remains limited to the execution of the educational task, it is likely that educational institutions will have inadequate opportunities to develop the drive that is required for the valorisation of knowledge. Examples taken from the higher professional education sector show that the adoption of an active coordinating role by educational institutions results in more active participation and in the creation of more new knowledge-demand combinations. The council urges educational institutions to articulate their individual contributions further. It advocates the idea that for the sake of the quality of education, educational institutions must not restrict themselves simply to their role of executing their educational tasks, but must play a more active role in contributing to (regional) innovations, as a result of which, as already stated, the quality of the primary function is also enhanced.

*Regional role (external conditions)*

The local and regional environment is a crucial factor for innovation and the development of knowledge. Particularly concerned here are:

- economic activity (the presence of knowledge intensive companies, the regional need for and availability of knowledge, availability of finance);
- the regional education context (the presence of an institute of higher education or university, and where this latter is concerned, principally as regards research capacity and existing relationships with R&D divisions); and
- regional identity (the so-called 'soft factors' that influence the functioning of networks and the innovative effects of these networks in the region, such as a dynamic urban environment combined with attractive residential, working and living conditions).

The demand for knowledge is determined to an increasing degree by physical, social, local and cultural factors. These factors function in fact as poles of attraction for the recruitment of highly trained and educated people, the 'creative class'.

The recommendations at hand place emphasis on three contributions made by education to the improvement of the Dutch innovation system that now require further attention supplementary to the recommendations made by the council in 2001.

- (1) Reinforcement of collaborative arrangements with educational institutions.
- (2) More appreciation for the use of knowledge in institutional policy.
- (3) Reinforcement of the regional dimension, linked to profiling of educational institutions.

The council adds a fourth contribution to the above:

- (4) Reinforcement of national government policy by means of:
  - (4a) financial incentives;
  - (4b) coherent government policy; and
  - (4c) support of educational institutions.

1) Reinforcement of collaborative arrangements with educational institutions

The council recommends that both roles of educational institutions – as executors of education on the one hand and active participants, coordinators or even initiators on the other – should be laid down in the regulations governing the adult/vocational education sector and the higher education sector, as constituting mutually reinforcing task elements.

In addition, the council recommends that innovation circles should be either introduced or reinforced in the adult/vocational education sector, the higher professional education sector and the university sector, and that the existence of these circles should be made more widely known to parties on the demand side.

In order to reinforce such arrangements, the council recommends that analogous to the reasonably effective combination of knowledge circle and specific functionary (lecturer) in higher professional education, this procedural form should be extended in the direction of innovation circles, that it should be attempted in the adult/vocational education sector and, under modified conditions, in university education.

2) More appreciation for the use of knowledge in institutional policy

The dual terms of reference, i.e. maintaining connections with a view to the execution of educational tasks and maintaining connections with a view to an innovative and developmental task – need to be expressed in internal and external assessment systems. The council's recommendations therefore include the following.

- The stimulation of competencies directed towards combining knowledge and demand (innovation) among students and teaching staff and the honouring and positive appreciation of these competencies among teachers. The council recommends that the Secretary of State should discuss this topic with the institutions.
- Functional differentiation aimed at innovation. The council recommends that the Secretary of State should discuss this topic with the institutions.

3) Reinforcement of the regional dimension

The recognition of a dual task entails giving more attention to regional strengths. The council therefore recommends the following.

- Provincial and municipal administrations can further reinforce their activities directed towards reinforcement of regional knowledge centres by means of consultations with the Secretary of State, the VSNU (the association of universities in the Netherlands), the Higher Professional Education Council and the Adult/Vocational Education Council.
- Provincial and local administrations can stimulate thematic approaches and cluster formation in the region by pointing out the regional potentials of the universities, institutes of higher education, regional training centres and agricultural training centres.
- The Secretary of State, in consultation with fellow officials and with regional/local authorities, can make a contribution to an even distribution of clusters across the nation, that will further reinforce the role of educational institutions.

4) Reinforcement of national government policy

*4a) Financial incentives*

- The Minister can give education a clearer role in the activities of the Innovation Platform. It is possible that this role can be made more prominent by the introduction of an Education and Innovation working group in this context.
- The council recommends the government should make part of the newly released extra innovation funds (Easter Agreement 2005) directly available to educational institutions for the (further) reinforcement of externally orientated innovation circles, including the appropriate lecturer-type functions, and for the implementation of associated projects aimed at stimulating innovation.

*4b) Coherent government policy*

- The council recommends that the Minister of Education, Culture and Science should collaborate with the Ministry of Economic Affairs in order to approach innovation via the institutional role on a joint basis and as part of a common policy task. Education, Culture and Science and Economic Affairs would be able to arrive at joint financing arrangements under the terms of this collaboration so as to promote innovation circles, appropriate lecturer-type functions and other measures.
- In order to ensure the coherence of innovation policy in the context of the Other Government project, the synergy between the departments of Education, Culture and Science and Economic Affairs on the point of innovation and the role that knowledge institutions play in this field would need to be enhanced and formulated into a clear policy objective.

*4c) National support of educational institutions*

The council recommends that educational institutions should be supported by means of dissemination of knowledge, the combination of demands and encouragement. Methods by which these measures are to be implemented should include the following.

- Conducting a more widely based campaign, in terms of which educational institutions with their specific strong points, particularly in the form of innovation circles and lecturers, are rendered much more visible than they are at the present time.

- Doing more in the direction of combining market demand, including the role of the government as a principal in the market that elicits the supply and creation of knowledge.
- Introducing a prize or premium to be awarded to innovation circles that show excellence in presenting and promoting the concept of innovation circles to educational institutions and commercial companies.