

## **BACKGROUND NOTE 2**

### **INNOVATION IN EDUCATION – COUNTRY STRATEGIES**

#### **OECD/Germany Workshop on “Advancing Innovation : Human resources, education and training”**

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#### **Session 7**

Innovation in education has important consequences for the effectiveness of learning/teaching, equity, and the cost efficiency of education systems. Most education ministries or other public authorities responsible for education have units dealing with innovation and improvement and implement a more or less explicit innovation strategy in education. In many cases, other actors than public authorities are involved in this educational innovation agenda.

This notes aims at outlining some of the main components of these strategies to promote and sustain educational innovations. Respondents were asked to provide a brief answer to the same questions, in their personal capacity. The answers do thus not necessarily reflect the official country views.

The covered countries are:

- Australia
- Austria
- Belgium
- France
- Germany
- Hungary
- Israel
- Netherlands
- Norway
- Sweden
- Turkey

## AUSTRALIA

### Innovation Strategy in Education

**1. Does your country have an explicit or implicit innovation strategy in education, at national or sub-national level? (please specify if explicit or implicit and refer to relevant documents if explicit)**

Australia's National Innovation System has recently been reviewed. Known as the Cutler Report into Innovation, the Panel's report was finalised in late August 2008.

More information on the review of Australia's National Innovation System can be found on the Cutler Review Report website

[http://www.innovation.gov.au/innovationreview/Documents/NIS\\_review\\_Web3.pdf](http://www.innovation.gov.au/innovationreview/Documents/NIS_review_Web3.pdf)

**2. What are the main objectives of the strategy (e.g. learning/teaching achievement, cost efficiency, equity/inclusion)?**

From an education and training perspective, innovation is fundamentally a people-driven exercise and a nation's capacity to innovate is inextricably linked to the breadth and quality and focus of its education and training systems.

Innovation matters to the productive capacity of Australia, and strong knowledge sources and a highly skilled workforce are important to continue to maximise Australia's full potential (including human capital resources) and to meet new and emerging challenges. Increasingly, Australia finds itself in a highly competitive international market where new and innovative policies, programs and practices are essential for success.

**3. What are the main types of policies, policy instruments and areas of activity of the innovation strategy in education (e.g. innovation grants or programmes, freedom in relation to curriculum or development of new curriculum, focus on teacher training, stakeholder engagement, focus on technology, on innovation in the teaching/learning process, etc.)?**

Attached is a copy of the Australian Government Department of Education, Employment and Workplace Relations (DEEWR)'s submission to the Cutler Review of Innovation. The submission provides further information on the Department's efforts to improve innovation capabilities in terms of quality teaching, university sector research and capacity building.

Also attached is a brief summary of Australian Federal Government initiatives in this area, as well as those from the Australia's States and Territories.

**4. How are these educational innovations linked with educational research, policy and politics, teaching practice, stakeholders, the business sector, international actors (e.g. European Commission)? Please give one or two examples.**

Australia's international education industry is the third largest export earner for Australia. International education has become such a significant service export as a result of this excellence in curriculum content, flexible educational delivery, including off-shore services and effective marketing. Export education further stimulates domestic innovation through the internationalisation of the education system by building international research and academic linkages and partnerships. Also, overseas students with Australian tertiary qualifications are an important supply of skills to Australia's economy with nearly one half of skilled migrants to Australia in 2006-07 holding Australian educational qualifications. This, in turn, benefits firms in their support of innovative activities. It also facilitates the absorption of both domestic

and internationally generated innovative processes and technologies and provides a valuable basis for international linkages in R&D.

**5. How is the innovation strategy governed? What are the public organisations (including ministry departments) that deal with (or steer) educational innovation in your country? What are the key private and social partners institutions involved in this area in your country?**

Innovation, as such, is the portfolio responsibility of the Australian Government Department of Industry, Innovation, Science and Research (DIISR). However, the Australian Government Department of Education, Employment and Workplace Relations (DEEWR) is responsible for education and training (at all stages of the life cycle), employment, workplace relations and social inclusion. DEEWR has a particularly strong interest and responsibility in ensuring that there is a high quality pool of people that can be attracted and retained in our labour force and that our management practices and work arrangements are flexible and adaptive to meet new and emerging challenge.

**6. What are the estimated resources (e.g. financial, human) devoted to develop and implement the innovation strategy? [no written response provided]**

## AUSTRIA

### Innovation strategy in education

*All answers relate to policies of the Ministry for Education, Arts and Culture which is not responsible for Higher Education (Ministry for Science and Research); outlined policy measures and approaches are just examples based on subjective impressions and do not give a comprehensive list of recent reform initiatives.*

#### **1. Does your country have an explicit or implicit innovation strategy in education, at national or sub-national level? (please specify if explicit or implicit and refer to relevant documents if explicit)**

For the time being there is no over-arching innovation strategy in education in Austria; however, strategy papers have been adopted for various priority policy areas: *e.g.*, ICT-strategy, white paper on quality assurance, LL-Guidance-Strategy, white paper on teacher training (currently under work)

Guidelines for concrete education policy reforms are set-up by each new government and its respective work-program.

A group of high-ranking national and international experts (“*Expertenkommission*”) has been charged by the Minister with the development of strategic recommendations for the development of the school system.

Furthermore, a Lifelong Learning Strategy with a genuine holistic approach (from ECEC to Adult Education) is being developed under the tutelage of the Ministry for Education and will provide general principles for the future development of teaching and learning quality as such (learner-centered approach, LL-guidance, life-phases orientation, LL-Learning, etc.) but also with regard to quantitative instruments for the development of education (benchmarks).

#### **2. What are the main objectives of the strategy (*e.g.*, learning/teaching achievement, cost efficiency, equity/inclusion)?**

Current strategic policy reforms in the field of education are targeted at the promotion of individual talents and competences (outcome-orientation, promotion of key competences, individualized learning approach, reduction of number of pupils per class, quality assurance in VET), general quality development (through standards, evaluation, teacher education, networking between schools) and the fighting of inequalities related to disadvantaged socio-economic backgrounds (in particular language learning, LL-guidance and prevention of ESL of migrants and persons with lower learning aspirations).

Examples of current policy initiatives are the introduction of the “*Neue Mittelschule*” (“Renewed High School”, a comprehensive school for 6-14 year old pupils aiming at the reduction of drop-out-numbers through early tracking); the initiative “25 plus” (reduction of the maximum number of pupils per class accompanied by measures aiming at increased personalized learning)

#### **3. What are the main types of policies, policy instruments and areas of activity of the innovation strategy in education (*e.g.*, innovation grants or programmes, freedom in relation to curriculum or development of new curriculum, focus on teacher training, stakeholder engagement, focus on technology, on innovation in the teaching/learning process, etc.)?**

Policy measures outlined above aim at innovative processes at the system level as well as the level of practitioners (teachers, school leaders)

At the system level, teacher training has recently been reorganized (upgrading of teacher training institutions to “Teacher Training Colleges” now complying with the “Bologna” system), thus aiming at an increase in the quality of teacher training.

The current process of implementing education standards will provide schools and teachers with increasing autonomy in choosing instruments and methods to achieve standardized learning outcomes while transparency and (self-)evaluation will be enabled.

Additionally, schools are encouraged to make use of their capacities as “learning organizations” (“Leadership Academy” for the training of school leaders, setting-up of networks of innovative schools, etc.)

Partly at the system level as well as at the practitioners’ level measures have been set to improve the teaching of MST and cross-curricular key competences related to creativity and innovation: The project IMST aims at giving support to MST teachers at system level (support by subject-related regional managers) and individual level in their ambitions to improve their didactic approach. A broad variety of projects and programs aiming at the promotion of MST (Sparkling Science, “*Jugend Innovativ*”, “*Forschung macht Schule*”) and cross-curricular competences (“*Kunst macht Schule*”, etc.) is funded/supported by the government and connects pupils/teachers with scientists/researchers/entrepreneurs or artists/the creative sector.

**4. How are these educational innovations linked with educational research, policy and politics, teaching practice, stakeholders, the business sector, international actors (e.g., European Commission)? Please give one or two examples.**

Strategic policy initiatives (white papers, etc.) are usually developed in close cooperation with scientific consortia and consulted with all relevant stakeholders (social partners, teacher unions, school partners, etc.). Evidence provided by international organizations and research (e.g., OECD/CERI, European Commission) is intensely taken into account.

Examples: The draft of the LLL-Strategy has been developed in close consultation with all relevant actors (Ministries, Unions, labour market, social partners, etc.) even before the beginning of the actual consultation process; the same approach was chosen for the ongoing process of the establishment of a National Qualifications Framework (NQF; in coherence to the European QF)

**5. How is the innovation strategy governed? What are the public organisations (including ministry departments) that deal with (or steer) educational innovation in your country? What are the key private and social partners institutions involved in this area in your country?**

Education innovations in the field of schools are governed by the Federal Ministry and the education authorities of the nine “*Länder*” (Counties); in some implementation processes (e.g., education standards) the Ministry is supported by the recently founded “Federal Institute for Education Research, Innovation and Development of the Austrian School System” (BIFIE); General tasks of the BIFIE are in particular data collection, evaluation, applied research and the elaboration of an analytical and comprehensive National Report on Education (every three years).

Key social partners are the Chamber of Labour, the Chamber of Commerce and the Federation of Industrialist, all of them being very active in the field of education policy and supporting most of the key reforms with high ambition.

**6. What are the estimated resources (e.g., financial, human) devoted to develop and implement the innovation strategy? [no written response provided]**

## BELGIUM

### Innovation strategy in education

Belgium has been undergoing a series of state reforms since the 1970's. As a result, it is now a federal state, consisting of three Regions (Flanders, Wallonia and the Brussels-Capital Region) and three Communities (Flemish-speaking, French-speaking and German-speaking).

Under the 1993 reform package, competence in the areas of science, technology, and innovation was given mainly - indeed, almost exclusively - to the respective Regions and Communities, leaving them free to determine their own science policy.

This contribution focuses on Flemish innovation policy.

#### **1. Does your country have an explicit or implicit innovation strategy in education, at national or sub-national level? (please specify if explicit or implicit and refer to relevant documents if explicit)**

From 1993 onwards, the popularisation of science and technology was considered an essential part of overall science and technology (S&T) policy. Accordingly, it had its own strategic primary and secondary objectives, which were implemented each year in a Science Information and Innovation Action Plan<sup>1</sup>. The strategic objective behind the actions taken is to maintain and strengthen support by the general public for science, technology, and innovation in a society that is becoming more and more knowledge-based. The strategy is broader than stimulating innovation in education, but as can be expected education is a very important part of it.

A new qualification structure will be drafted to adapt education more to the requirements of lifelong learning and the knowledge society. This qualification structure will align education more with employment needs through (1) modular education programs in the field of vocational education, (2) the development of a qualification portfolio and (3) the recognition of competencies acquired in non-formal education.

#### **2. What are the main objectives of the strategy (e.g. learning/teaching achievement, cost efficiency, equity/inclusion)?**

General objectives:

- To provide information about science and technology in general, and about scientific technological research in particular
- To raise awareness of the importance of scientific and (innovative) technological research and innovation
- To account for the use of the budget that the government allocates to such research and innovation
- To create a culture that welcomes technological innovation

Specific objectives:

- To boost the scientific and technological potential of all citizens through (ongoing) education and hence increase the influx and outflow of S&T students or participants in other S&T-related training courses
- To encourage entrepreneurs to be (technologically) innovative

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<sup>1</sup> The website detailing this action plan is available (in Dutch) at [www.wetenschapmaaktknap.be](http://www.wetenschapmaaktknap.be) .

- To encourage students, especially girls, and involve them (in the attainment) of the above objectives
- To raise general public awareness of S&T issues.

**3. What are the main types of policies, policy instruments and areas of activity of the innovation strategy in education (e.g. innovation grants or programmes, freedom in relation to curriculum or development of new curriculum, focus on teacher training, stakeholder engagement, focus on technology, on innovation in the teaching/learning process, etc.)?**

The action plan is aimed essentially at the general public and youngsters at school. Special attention will be paid to girls and promoting their interest in science and technology, since the statistics suggest that they in particular tend to drop the "hard" sciences during education. In Flanders this trend is especially clear-cut in engineering, computer science, chemistry, and physics.

**4. How are these educational innovations linked with educational research, policy and politics, teaching practice, stakeholders, the business sector, international actors (e.g. European Commission)? Please give one or two examples.**

Implementation of the action plan is a combined effort involving many different actors. Cooperation with the business sector is a very important aspect, e.g. mentoring programme by the Royal Flemish Society of Engineers for young people (16 to 18 yrs old).

**5. How is the innovation strategy governed? What are the public organisations (including ministry departments) that deal with (or steer) educational innovation in your country? What are the key private and social partners institutions involved in this area in your country?**

Ministries involved are the department of Economy, Science and Innovation and the department of Education and Training. Private partners: Technopolis, universities, colleges of higher education, scientific institutes, organizers of Science Olympiads, (public) observatories, VRT, the Roger Van Overstraeten Society, and many others

**6. What are the estimated resources (e.g. financial, human) devoted to develop and implement the innovation strategy?**

In 1994, the action plan was allocated a budget of around €743,680 (at the time 0.1% of the overall S&T policy budget). By 2007, this figure had increased to around than € 9,000,000 (equivalent to around 0.56% of the overall S&T policy budget). In 2009 a budget of 9,100,000 is provided.

## FRANCE

### Innovation strategy in education

#### **1. Does your country have an explicit or implicit innovation strategy in education, at a national or sub-national level?**

Innovation in education has always existed in France locally. Since 1994, the Ministry of Education has kept an inventory of these innovations through the creation of the database, Innoscope ([http://eduscol.education.fr/D0092F/bdd\\_accueil.php](http://eduscol.education.fr/D0092F/bdd_accueil.php)). This database gathers and promotes a large number of innovative educational and learning activities.

Since 2005, innovation is encouraged within the framework of a law which is called the “*Loi d'orientation et de programme pour l'avenir de l'École*”. Article 34 of this law explicitly proposes to develop experimentation in the schools. These projects must be submitted to and authorised by the rector (a regional representative of the Ministry of Education for each of France's 27 regions). To give an idea of the scope of Article 34's influence, this law covers around one thousand projects per year. These projects can receive special support from the rector and may go beyond the curricula. They can be consulted through an on-line library called “*Bibliothèque des expérimentations pédagogiques*” ([http://eduscol.education.fr/D0216F/bdd\\_accueil.php](http://eduscol.education.fr/D0216F/bdd_accueil.php)).

Innovation is also considered to be one of the skills that a teacher should acquire during in-service training. The National Council of Education (*Haut conseil de l'éducation*) is in charge of a yearly evaluation of the experimentation implemented within the framework of Article 34.

#### **2. What are the main objectives of the strategy (e.g., learning/teaching achievement, cost efficiency, equity/inclusion)?**

The innovation strategy generally aims to develop and analyse new ways of teaching a discipline, interdisciplinary approaches, class and school organization, partnerships between actors in the education system and twinning classes between France and other countries abroad.

The experimental projects deal with the following questions:

- What are the new modalities of classroom organization to improve pupils learning?
- How to identify the different forms of intelligence and propose a diversity of learning paths?
- How to encourage a pupils mastering language (oral and written)
- How to improve the evaluation of the pupils?
- How to develop collective work within the school and with external partners?
- How to assess evaluation, especially in an experimental project ?

#### **3. What are the main types of policies, policy instruments and areas of activity of the innovation strategy in education (e.g., innovation grants or programmes, freedom in relation to curriculum or development of new curriculum, focus on teacher training, stakeholder engagement, focus on technology, on innovation in the teaching/learning process, etc.)?**

The policy is based on:

- A law which encourages experimental innovation
- A national network for innovation lead by the Ministry of Education (MIVIP)
- Human and material support for innovative projects

The teachers involved in this program have the possibility (but are not obligated) to change the national curriculum and the schedule of the class.

**4. How are these educational innovations linked with educational research, policy and politics, teaching practice, stakeholders, the business sector, international actors (e.g., European Commission)? Please give one or two examples.**

Various researchers (especially from Institute of Pedagogical Research) are involved in Article 34 experimentation.

One example:

The experimentation of integrated science and technology teaching in junior high schools was launched in 2006 for a duration of four years. It offers a major change in science teaching practices in French junior high schools. The layout of the experimentation is the result of reflection lead by the French academy of science in view of teaching practices in other countries where the distinction from one scientific subject to another is made later in the student's career. The experience gained from developing the hands-on program in primary school, and the privileged dialogue with the French Ministry of Education on that matter helped develop the experimentation that is described in the table below.

Teachers joined the program voluntarily. They are supported and guided in several ways.

- The Academy of science provides them with progressive guidelines and teaching materials elaborated by scientists and educators. Moreover, every school team involved in the project meets with a scientist from the research community, at least once a year, with whom they share their view of science and are presented with emerging topics in science.
- The ministry of education has allocated an inspector in every region to closely follow each experimental project. Inspectors visit the classes concerned and organize training sessions for the teachers involved during a maximum of three or four days a year.
- The Academy of Science is working on reducing the gap between industry and education. During the last few months, teachers can contact a network of engineers (CGénial) to develop a project with pupils where they can seek out and benefit from the various skills and competencies of engineers.

Today, this experimentation is by far the most developed amongst all the projects followed by the Ministry's innovation office. In June 2008, a decision was taken to launch a large-scale evaluation program involving participants from educational research, educational policy (general inspectors), and the Office of Statistical Studies of the Ministry of Education. Twelve case studies are being conducted by researchers from the National Institute of Pedagogical Research (INRP, ENS Cachan, project leader: Professor Maryline Coquidé). A report giving a general overview of the experimentation has been added to the general inspectors agenda of 2009. Pupils' knowledge, competencies and attitudes toward science will be assessed following the experimentation and compared with a test group. Teachers and pupils will be

questioned on their impressions of the new teaching approach. This large-scale evaluation should serve as a benchmark for improving evaluation of future educational innovations.

**5. How is the innovation strategy governed? What are the public organisations (including ministry departments) that deal with (or steer) educational innovation in your country? What are the key private and social partners institutions involved in this area in your country?**

The Ministry of Education has implemented a national network dedicated to innovation. It consists of a national team located in the Ministry of Education (MIVIP) with a relay (innovation cells) in each region (27). The process is decentralized. Each year, every rector selects and funds various experimental projects. Some of these are also supported by regional participants (such as regional council [*conseil régional*], county council [*conseil général*]). The regional cells generally have a website (see, for instance, Paris: <http://innovalo.scola.ac-paris.fr/> or <http://innovalo.scola.ac-paris.fr/>) and a review.

**6. What are the estimated resources (e.g., financial, human) devoted to develop and implement the innovation strategy?**

There is no precise evaluation of the cost of this innovation strategy. In fact, the support is provided by the rector to its own project after validation of the projects. Sometimes, a project is undertaken with no budget; sometimes with strong support. For instance, each year the EIST receives the equivalent of 6 030 additional course hours (*i.e.*, 587 000 euros) in order to associate physics teachers in Year 1 of middle school (which is not the case for other schools) and provides a weekly meeting for the teachers involved in the project in the school.

## GERMANY

### Innovation strategy in education

#### **1. Does your country have an explicit or implicit innovation strategy in education, at national or sub-national level?**

Education and training are on one hand preconditions for individual chances and social participation. On the other hand they are the key for an efficient, innovative economy and a stable democracy. That is why the federal government and the prime ministers of the Länder agreed upon the Qualification Initiative during the “education summit” in October 2008. Its focus is set on modernizing and enhancing education and training (“Aufstieg durch Bildung” – Advancement via Education).

#### **2. What are the main objectives of the strategy?**

The Qualification Initiative has ten main objectives:

1. advancement via education
2. improving early childhood education
3. linguistic skills as a key to education
4. boosting interest in engineering and science
5. improved training opportunities for pupils/students
6. promoting vocational education and training
7. enhancing tertiary education to secure Germany’s innovative potential
8. boosting lifelong learning
9. corporate responsibility for vocational education and further training
10. sharing of responsibility between the federal government and the Länder

The underlying goals are both an improvement of learning/teaching achievement and the fostering of equity (inclusion).

#### **3. What are the main types of policies, policy instruments and areas of activity of the innovation strategy in education?**

The Qualification Initiative is a framework resolution and for all the above mentioned points there are concepts available, elaborated at present to different levels of implementation, for example:

- initiatives in early childhood education
- investment programme for all-day schools
- education panel
- VET modularization
- national education report

In the following we would like to set a focus on the policy area of lifelong learning: it is essential to enable all people to actively cope with and help shape social and economic structural changes. Lifelong learning also offers ways for people to safeguard their jobs and for companies to develop the market for their products and services through continuous innovation. Facing these challenges is one of the main educational priorities in Germany today. That is why the Federal Government passed the Conception for Lifelong Learning in April 2008. Measures being implemented at the moment include:

- Lernen vor Ort (“Learn locally“): Lernen vor Ort is a joint initiative of the Federal Ministry of Education and Research and German foundations. The initiative creates incentives for municipalities to develop a coherent local education management system. The aim is to systematically link the different chapters of individual learning biographies to one another. The foundations bring in their knowledge about local networking and their experiences in education innovation in order to accompany and support the municipalities locally.
- Research and development programme: The Federal Government will improve knowledge in the important topics of continuing education, such as demographic change, informal learning, data reporting systems for continuing education, quality and professionalization, the links between high-tech and continuing education, etc.
- “Bildungsprämie”: the financing of continuing education is to be facilitated for as many people as possible, thus mobilizing in particular those population groups who have so far not been able to improve their individual opportunities on the labour market due to lack of financing. Three new instruments have been introduced as an educational savings concept:
  - a continuing education bonus, a voucher worth up to €154 that is given to low-income groups to support their continuing education activities. Receiving guidance in advance is a stringent condition for this bonus,
  - an amendment of the Capital Formation Act offers the possibility of taking money out of savings amassed under the law promoting capital formation (“Vermögensbildungsgesetz”) by employees to be invested in their personal continuing education,
  - and a low-interest loan for more comprehensive continuing training.

The federal government and the Länder continue to provide funding to a large variety of projects that aim to develop innovation in education and to transfer good practice. A database is available under <http://www.bildungsserver.de/innovationsportal/blk.html>.

**4. How are these educational innovations linked with educational research, policy and politics, teaching practice, stakeholders, the business sector, international actors? Please give one or two examples.**

Educational research: The framework programme for the advancement of empiric educational research was developed in close cooperation with the Länder and the scientific community. Its aim is to create the scientific base for securing and developing quality in the education system. The programme has two focuses: measures for strengthening the structure of empiric educational research and a thematic research focus.

Business sector: About 60% of all young people in Germany qualify in the dual system of vocational training. Professional training takes place in the company as well as in the vocational school. In the company the trainee receives a predominantly practical education. In the vocational school the operational education is complemented with theoretical bases. A new path to a university degree has been created for the IT branch in close cooperation of ministries, employers and trade unions, supported by the Federal Institute for Vocational Education and Training (BIBB): work accompanied by advanced trainings.

International actors: The revival of lifelong learning goes back to activities of the EU and OECD in 1996 and has led to an continuous development of programmes and projects in Germany up to today. The paradigmatic shift of 1996 (OECD Education Ministerial) – to emphasize the demand for education more prominently than in the past – is still valid in Germany.

**5. How is the innovation strategy governed? What are the public organizations (including ministry departments) that deal with (or steer) educational innovation in your country? What are the key private and social partners institutions involved in this area in your country**

Competencies in the area of education policy are mainly in the hand of the Länder, while the Federal Ministry of Education and Research, the Federal Ministry for Family Affairs, Senior Citizens, Women and Youth, the Federal Ministry of Economics and Technology and the Federal Ministry of Labour and Social Affairs are also involved. Institutions like the Federal Institute for Vocational Education and Training (BIBB) or Capacity Building International (inwent) are dealing with education as well as committees and steering groups like the Committee on Innovation in Continuing Training for a Strategy for Shaping Lifelong Learning and the Innovation Circle on Vocational Education and Training.

**6. What are the estimated resources (e.g. financial, human) devoted to develop and implement the innovation strategy?**

The federal and Länder governments want to increase the education budget (public and private expenditure) to 10% of the GDP – this goal should be reached by 2015, 7% of which will be invested in education and 3% in research. This budget will also cover resources for further innovations besides the basic/running costs of the system as a whole.

## HUNGARY

### Innovation strategy in education

#### 1. Does your country have an explicit or implicit innovation strategy in education, at national or sub-national level?

Since the middle of the end of the eighties innovation in school education has been an important element of education policy in Hungary. The idea that school education should be renewed by innovations initiated by schools and that national policy should encourage innovative institutions has emerged following the perceived failure of earlier large scale school reforms. The most visible sign of this was the creation and the operation of various national development/innovation funds that have made it possible for schools to gain financial support for their initiatives aiming at improving their pedagogical practice. Currently, at national level, the *Public Foundation for Education* (“*Oktatásért Közalapítvány* – <http://www.oktatasert.hu/rolunk>), founded by the government in 2005, has the explicit role of supporting school level innovations, but there are other mechanisms as well.

Although the goal of supporting school level innovations has appeared in various strategy documents we cannot speak about the existence of an *explicit* national strategy for educational innovation. The various elements of an *implicit* innovation strategy can be observed mainly in the operation of various educational development programs. Such programs operate also at sub-national level. These programs are typically led by commissions delegated by the founding public agencies, and the goals of the programs are set typically by these commissions (in this sense they are formulating the elements of implicit strategies).

Since 2004 programs financed from the European Social Fund (ESF) have been playing the most important role in supporting school level innovations. In the case of these programs the goals are set in national strategies in conformity with the ESF regulations.

Although the country has an overall national innovation strategy for the period of 2007-13 (see: <http://www.nkth.gov.hu/innovaciopolitika/strategiai/kormany-kozeptavu-2007-080519>) established on the basis of the so called “Innovation Act” (adopted by parliament in 2004) the education sector does not appear in this strategy as an area where innovations are needed. The education sector (mainly higher education) appears in this strategy as an area *contributing* to technological innovation but it is not seen as a sector which *itself needs* technological innovation.

#### 2. What are the main objectives of the strategy (e.g., learning/teaching achievement, cost efficiency, equity/inclusion)?

The main objectives of the *implicit* strategy of innovation referred to above are set typically by the goals of the various development programs which determine the eligibility of school level initiatives for support. As for the ESF programs, the main objectives are educational changes that contribute to economic competitiveness, employability and social inclusion. The various national and sub-national development and innovation programs support a high variety of goals, such as the introduction of ICT into schools, education for environment protection, extra-curricular education, vocational training, educational publicity, artistic education, foreign language learning, the education of pupil groups demanding special support (the disadvantaged, the gifted, the handicapped etc.).

There are three areas that should, probably, be stressed particularly. The first is *ICT*: there have been large programs aiming at introducing ICT into education, including the use of web based contents in classroom teaching. The second is *inclusion*: there have also been large programs aiming at improving the capacity of schools to cope with the integration of the most disadvantaged student groups (for example children belonging to the Roma population) and that of students with special educational needs. The third is

*competence development*: a large program has aimed at transforming classroom level teaching practices so that they are better orientated towards developing competencies needed for lifelong learning.

It is important to stress that in many cases it is not easy to make a distinction between genuinely innovative school level initiatives and those which aim simply at getting some extra funding for the regular operation of the institution.

**3. What are the main types of policies, policy instruments and areas of activity of the innovation strategy in education (e.g., innovation grants or programmes, freedom in relation to curriculum or development of new curriculum, focus on teacher training, stakeholder engagement, focus on technology, on innovation in the teaching/learning process, etc.)?**

It is possible, beyond the development or innovation funds/programs mentioned above, to find examples to practically all possible policy instruments. In general one can say that the general national policy and regulatory environment in Hungary is particularly favourable for innovations. However, in a number of cases it is not evident that the various interventions, which often have been created for other goals, are also enhancing innovation. In several cases the various measures or actions have not been created deliberately as policy tools for innovation but they support innovation as a kind of secondary or supplementary function.

The most important policy instrument is, probably, the freedom and the legal obligation for schools to establish their own pedagogical program. Since 1998 every school has to create its own pedagogical program which includes such elements as the school level curriculum, the ways of organizing learning and teaching or evaluating pupils. This makes it inevitable for every school community to think substantially about how they organise teaching and learning and makes school level innovations not only possible but almost “unavoidable” (the quality of these innovations in many schools has become a major concern).

In the past decade the second most important policy tool was perhaps the use of IC technology. ICT has been seen as a tool that can transform the way teaching and learning is organised in classrooms. There has been significant investment into (a) hardware, (b) the provision of web-based curriculum content, and (c) the capacity of teachers to use ICT.

The third key policy tool to be mentioned has been the professional development of teachers. Since the middle of the nineties a new demand-led system of teacher professional development has been in operation. Furthermore a specificity of many development programs is the presence of a strong training component (that is a large part of the resources are spent on training). At present the relevant regulations are being revised and one of the declared intentions is to link in-service training better to school level innovations.

A further policy tool that should be mentioned here is quality assurance. Following an experimental period where quality assurance methods used in enterprises were adapted to the school sector every school was obliged to establish its own internal quality management system. This has been pushing many schools to revise their internal organisational and management arrangements and has become a strong incentive for innovations in management and organisational operations.

**4. How are these educational innovations linked with educational research, policy and politics, teaching practice, stakeholders, the business sector, international actors (e.g., European Commission)? Please give one or two examples.**

The link between educational research and innovation seems to be particularly interesting in the Hungarian case. Due probably to the favourable regulatory environment and to the lasting operation of various innovation/development funds/programs the borderline between research and innovation became less sharp

than in some other countries. There are many people and many agencies who/which operate somewhere on the borderline of research and practice (sometime this sector is called the pedagogical support sector). As, since the middle of the eighties there has been no state inspection in the country the pedagogical support function could not be provided by inspectors and, therefore, it was not influenced by the formal traditions of inspection.

International actors have been playing a particularly important role. At the beginning of the nineties the World Bank was a key actor, which supported a VET curriculum reform based on school level initiatives. In the middle of the nineties the Soros Foundation created a major development program (when this was created it was spending more money on educational *development* than the Hungarian state). As mentioned earlier, recently the European Social Fund gained a key role within the framework of overall national development programs.

The role of the business sector is increasing but it is still limited. There are many private for-profit agencies (“educational entrepreneurs”) which are specialised in providing pedagogical support which is often enhancing innovations. The existence of these private service providers has been supported by the favourable regulatory environment (for example by the use of demand-led approaches which made it possible for schools and local authorities to become purchasers of services). Textbook publishers are a second important group of business that can, in principle, support innovations, although their role in innovation seems to be rather modest. Recently some multinational ICT companies (such as, for example, Cisco or Microsoft) entered the education sector and became sources of innovation, typically related to the use of ICT.

An interesting model was developed a few years ago by the National Institute for Public Education, a research and development institute founded by the national ministry of education.<sup>[1]</sup> In its strategy this institute positioned itself as being in the middle of a triangle made by the three poles of (1) school practice, (2) government policy, and (3) research. According to this strategy the institute had (1) to contribute to school level innovations, so that what it produced (2) is led by and relevant for government policy and (3) all this is done meeting scientific standards.

**5. How is the innovation strategy governed? What are the public organisations (including ministry departments) that deal with (or steer) educational innovation in your country? What are the key private and social partners institutions involved in this area in your country?**

There are agencies and organisations playing a role in innovation at both national and sub-national level. At the national level a limited number of agencies founded by the ministry of education are responsible for the running of the central components of the national development programs which contain elements of support for innovation. At a national level, the government agency with overall responsibility for development also plays a role (the Hungarian National Development Agency coordinating and sometimes directly managing EU funded development programs).

The government agency responsible for the implementation of the national innovation policy (National Office for Research and Technology – NOfRT) plays a relatively modest role in the sector of education-related innovations, which is in conformity with what has earlier been said about the lack of reference to education sector related innovations in the national innovation strategy. However, as some programmes managed by NOfRT may contain education sector related elements, this agency also has to be mentioned among those governing the (implicit) innovation strategy of the education sector.

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<sup>[1]</sup> This institution has since been merged with other national level agencies.

At the sub-national level regional or city level, self-governments might also run agencies involved in innovation. For example in all of the 19 counties there are county-level public foundations that distribute resources for schools, and this often supports school-level innovations.

As already mentioned, some for-profit private agencies also are active in this field.

**6. What are the estimated resources (e.g., financial, human) devoted to develop and implement the innovation strategy?**

As no clear borderlines can be drawn between the sphere of innovation and other spheres of activity and, as innovation is present in a diffuse way in many activities, it is not possible to estimate with any accuracy the size of resources spent on innovation in education.

One estimate could be based on the size of resources spent on development programs. For example, for the period 2004-06 in the national development plan of the country 68 billion HUF was planned to be used (from the ESF and the domestic matching funds) to modernise the systems of school education, vocational training and higher education. This is approximately 7% of all educational expenditure in 2004. These resources could not be used to finance operational costs or infrastructural investments: they have been used to finance developments with a strong innovation element.

## ISRAEL

### Innovation strategy in education

Innovation in education has important consequences for the effectiveness of learning/teaching, equity, and the cost efficiency of education systems. Most education ministries or other public authorities responsible for education have units dealing with innovation and improvement and implement a more or less explicit innovation strategy in education. In many cases, other actors than public authorities are involved in this educational innovation agenda.

This notes aims at outlining some of the main components of these strategies to promote and sustain educational innovations. This will allow a better understanding of how and to what extent these strategies reflect broader national innovation strategies, and will also highlight the differences and commonalities in approaches across OECD countries.

These educational innovation strategies can also differ according to the level of education, and this note will provide some national examples at these different levels.

Please provide a brief answer to the following questions, in English or French (your response should not be more than 2 pages). Should there be no explicit educational innovation strategy in your country, please describe instead how you view the implicit strategy:

**1. Does your country have an explicit or implicit innovation strategy in education, at national or sub-national level? (please specify if explicit or implicit and refer to relevant documents if explicit)**

ISRAEL does not have an explicit or implicit innovation strategy in education, at national level. There are a few initiatives in different fields and circumstance at sub-national level.

The main initiatives are as follows:

**The DEI, Ministry of Education, Division for Experiments and Innovations**

The mission of the Division for Experiments and Innovations (DEI), is to empower the Israeli school system by transforming knowledge and experience at the school level into practical and fully developed educational models that can be widely used. Experimental schools are expected to develop **models** that provide a sound **theoretical** underpinning, **method for development**, and educational **infrastructure** needed for successful adaptation by other schools. The models developed are intended to be of outstanding quality so that they can readily be spread throughout the system.

**The Ministry of Industry, Trade & Labor**

The Ministry of Industry, Trade & Labor has an "Encouraging Innovation and Creativity" policy and a dedicated program (unit) for innovation in Industry. The office run programs for collaboration with universities, and international collaboration between industries in many countries around the world, specifically in Europe.

**The Humanities Fund**

The **Humanities Fund** is a joint initiative of the Planning and Budgeting Committee of the Council for Higher Education and Yad Hanadiv. This fund has been established, upon the recommendation of the Committee for the Examination of the System of Higher Education in Israel (The Shochat Committee), to support activities that will lead to long-term improvements in the humanity fields in Israeli universities. The grant programs in the first funding cycle will focus on the following areas (see details below):

1. Inter-university collaboration
2. Fellowships for senior researchers
3. Innovation Grants
4. International Distinction

The objective of the Innovation Grants is to encourage innovative approaches in the Humanities and their role within a research university. Grants will be considered in two broadly defined areas: Innovation in Research and Innovation in Teaching.

The last years have seen a few public committees targeting towards change, improvement, and strategic planning in the field of education in Israel.

The **Dovrat Committee** was originally appointed by the Minister of Education, Mrs. Livnat, with the goal of initiating significant changes in the education arena. With the elections a new minister of education was instated and, along with a strong teachers' union followed by a protracted strike, the committee's recommendations were not implemented.

The **Shochat Committee** (named after a former Finance Minister, Avraham Shochat), aimed at an "examination of the system of higher education in Israel". The committee sought to address several specific issues regarding the resources of Israel's eight universities. For example, budget cuts to higher education since 2001 have reached nearly NIS 1.4 billion (\$375 million) and, together with the loss of income due to lower tuition fees, the per student expenditure on higher education has fallen 20% during that period. Zero (- 0 - ) results were found for the reference "innovation" in the committee report.

The **Horovitz Committee's** "Israel 2028: Vision and Strategy for Economy and Society in a Global World" is an extensive plan to achieve national objectives: rapid, balanced growth and reduction of social gaps, aimed at positioning Israel among the 10-15 leading countries, in terms of economic achievement and quality of life, over the next twenty years. This expansive plan was created through the initiative of the U.S.-Israel Science and Technology Commission (USISTC) on the one hand, and individuals involved in economics, business, science, and technology in Israel, on the other, who saw it as their civil obligation to undertake and promote this important mission, with the help of experts in the various, relevant fields. The Horovitz Committee proposes a national strategy of innovation based on advanced knowledge and the values of excellence and originality, in an open society that promotes high quality and treats all its segments fairly, advancing and strengthening the education system from kindergarten through higher education. In addition, it proposes applying scientific research, dispersing interdisciplinary innovation, and leveraging technology throughout traditional economic sectors. This report has been presented to the representatives in the U.S. and was adopted by them. The report has not yet been presented in Israel due to the constraints of the imminent national elections.

For comparison, search the 2028 report, result – 146 - for references for "innovation".

## **2. What are the main objectives of the strategy (e.g. learning/teaching achievement, cost efficiency, equity/inclusion)?**

There are different objectives in the different fields:

The Ministry of Education emphasizes the learning/teaching achievement objective focused on early childhood and primary education. The Horovitz Committee is targeting collaboration with industry as well as inclusion.

## **3. What are the main types of policies, policy instruments and areas of activity of the innovation strategy in education (e.g., innovation grants or programmes, freedom in relation to curriculum or**

**development of new curriculum, focus on teacher training, stakeholder engagement, focus on technology, on innovation in the teaching/learning process, etc.)?**

There are blend of policies. The Ministry of Education allows freedom in relation to curriculum or development of new curriculum and focuses on teacher training, The Humanities Fund allots innovation grants, and The Horovitz Committee (2028) deals with stakeholder engagement and focuses on technology and innovation

4. How are these educational innovations linked with educational research, policy and politics, teaching practice, stakeholders, the business sector, international actors (e.g. European Commission)? Please give one or two examples.

The connection to industry is evident only in the 2080 report. The Industry Ministry operates its own Innovation Center to promote innovation methods within traditional industrial companies and have a dedication budget for this matter.

**5a. How is the innovation strategy governed? What are the public organisations (including ministry departments) that deal with (or steer) educational innovation in your country?**

As noted in the previous responses, there is no one governing body of innovation strategy at the national level. Rather, decentralized authorities govern their own local strategies and programs.

**5b. What are the key private and social partners institutions involved in this area in your country?**

Private Foundations: The Yad Hanadiv Foundation (Rothschild Foundation), The U.S.-Israel Science and Technology Commission (USISTC).

**6. What are the estimated resources (e.g. financial, human) devoted to develop and implement the innovation strategy?**

There is no public information about the resources in the varied programs for innovation.

## NETHERLANDS

### Innovation strategy in education

**1. Does your country have an explicit or implicit innovation strategy in education, at national or sub-national level? (please specify if explicit or implicit and refer to relevant documents if explicit)**

Innovation strategy in the Netherlands is a matter of explicit policy. This policy is incorporated in different policy documents (often part of a wider agenda) and can be distinguished in three strands. The first strand is innovation on the level of the educational sectors themselves. A few years ago, educational institutes themselves were made responsible for innovation and central innovation budgets were transferred to their associations. The second strand is enacted on the national level to promote innovative approaches to persistent problems like teacher shortages. And the third strand (implemented by Kennisnet, a public ICT support organisation for education) is to promote development and wider use of digital teaching and learning. In preparation is another approach aimed at enhancing the productivity of education as part of a wider innovation agenda for the Dutch society.

**2. What are the main objectives of the strategy (e.g., learning/teaching achievement, cost efficiency, equity/inclusion)?**

The main objective is improving the quality of teaching and learning with different focuses per educational sector. In primary and secondary education for instance, impending teacher shortages have to be addressed in innovative ways. And in secondary vocational education, the most important innovation is redesigning towards a competences oriented system. Developing more digital teaching and learning material is a current topic for all sectors.

**3. What are the main types of policies, policy instruments and areas of activity of the innovation strategy in education (e.g., innovation grants or programmes, freedom in relation to curriculum or development of new curriculum, focus on teacher training, stakeholder engagement, focus on technology, on innovation in the teaching/learning process, etc.)?**

For every educational sector, there is an appropriate mix of policy instruments brought into action. In the first place, all the agenda's have been decided in consultation with the sectors in order to enhance their ownership of these policies. And the instruments are chosen to match the different problems, so they diverge: developing new (digital) materials, starting new types of teacher training, introducing competences oriented education. In most of these cases, there are extra budgets involved, but also support from scientists and other experts.

**4. How are these educational innovations linked with educational research, policy and politics, teaching practice, stakeholders, the business sector, international actors (e.g., European Commission)? Please give one or two examples.**

The Academic Teacher Training Schools are an example of closer links between schools and teacher training institutes. Teacher training takes partly place in these schools. By bringing also researchers into these schools, the innovation capacity of teachers will be strengthened. Another example is the iCademy, an initiative of an agency for secondments of technical staff. ICademy is an online learning space for graduates from secondary vocational education who combine their first job with following a bachelor course in ICT studies. This iCademy via the internet is that efficient that it can be done in two years' time i.s.o. the regular three years. And in the mean time, the employer benefits also because of the fact that staff members are developing themselves without hardly any loss of productivity.

**5. How is the innovation strategy governed? What are the public organisations (including ministry departments) that deal with (or steer) educational innovation in your country? What are the key private and social partners institutions involved in this area in your country?**

The innovation strategy is taking place on different levels in the system. As mentioned above, different parties are steering innovation each at their own level. The most important organisations are the ministry of Education, Culture and Science on national level, the various associations of schools on the level of the sector (PO-raad, VO-raad, MBO-raad, HBO-raad, VSNU), the Association for the Professional Qualities of Teachers (SBL), various public support organisations like the foundation Kennisnet for innovation connected with ICT. For instance, a school for secondary education can take part in an activity of the Innovation Platform for Secondary Education called Expedition Thinking, Daring, Doing (Expeditie Denken, Durven, Doen) by putting forward their innovation plan and applying for extra money to put this innovation into effect. Members of this Innovation Platform are not only the schools, but also businesses like Cisco en IBM.

**6. What are the estimated resources (e.g., financial, human) devoted to develop and implement the innovation strategy?**

At a guess I should say that the many different resources in the various educational sectors put together would make up to two billion euro's. Please note: partly temporary extra money.

## NORWAY

### Innovation strategy in education

#### **1. Does your country have an explicit or implicit innovation strategy in education, at national or sub-national level? (please specify if explicit or implicit and refer to relevant documents if explicit)**

Norway does not have an explicit innovation strategy in education, but there are several strategies and processes that contribute to fostering innovation in education, both in terms of promoting a culture for innovation and entrepreneurship and in terms of creating an innovating education system.

Norwegian has for some years had a strategy for entrepreneurship in education and training. The Government's vision behind this strategy is that entrepreneurship in the education system shall renew education and create quality and multiplicity in order to foster creativity and innovation. In the following answer I will focus on this strategy as I believe that it highly contributes to create an innovative mindset in the education system.

The Government will present the first Norwegian white paper on innovation policy later this year. The white paper will give a policy foundation for sustainable wealth creation in a long-term perspective. Human capital is regarded as a cornerstone to maintain and increase innovation. The main human capital focus is on basic skills and lifelong learning, enhancing recruitment and quality in MST related education and research, and policies to prepare for and changes in demand and supply of labour due to future changes in the demographic structure.

The Government is also working on a white paper on skills. The paper aims at developing tools oriented at meeting the demands for competence in the future. Key issues will be how to give individuals the opportunity to develop their skills and how to enhance human capital overall. The white paper will be presented by the Ministry of Education and Research in 2009.

The Government is also focusing on education research in order to establish a solid knowledge base in order to improve learning, equity and efficiency outcomes and prepare the education system for challenges and demands in the knowledge society. It is a turbulent time for Norwegian schools. Pupils in Norway rate relatively low on international knowledge surveys, despite the implementation of school reforms and major initiatives. Politicians, professionals and parents alike are seeking effective measures, but there is disagreement on approaches and solutions and there is a need for more knowledge.

Since 2003 a research programme on Knowledge, Education and Learning (KUL) has actively supported efforts to build a long-term knowledge base about Norwegian education and the overall educational system. The KUL programme has now drawn to a close and replaced by two programmes; 1) a Programme for Practice-based R&D in Pre-school through Secondary Schools and Teacher Education (PraksisFoU) which aims to advance R&D activities in teacher education programmes, and improve coordination between teachers' education and professional practice and 2) a new programme, Education 2020, which will be presented later this year. Both programmes are administered by the Research council of Norway and financed by the Ministry of education and research.

#### **2. What are the main objectives of the strategy (e.g., learning/teaching achievement, cost efficiency, equity/inclusion)?**

Together these various strategies cover a wide range of objectives. My opinion is that lately learning and teaching achievement and equity and inclusion have been especially important for the Norwegian Government.

The main goals for the strategy for entrepreneurship in education and training are as follows:

**Primary school level:** Training in entrepreneurship at this stage shall have its main focus on developing the pupils' ability to trust themselves, take responsibility, permit trial and error and develop creativity and the desire to find things out. Further, development of social skills and the ability to collaborate are at the very centre.

**Lower secondary school level:** At this stage the focus will be on development of central skills such as concept development, problem-solving, decision-making and network-building. Pupils should be encouraged to utilize resources and exploit opportunities locally, feel responsibility for common work tasks and learn to take the consequences of their own choices

**Upper secondary level:** At this stage training focus on learning through practical work, for example in the form of a youth enterprise. Competence milieus outside the school can be used in all programme subjects to increase relevance and realism. Knowledge of working life, of enterprise-founding, of ethics/environmental theory,

**University and college level:** At this level the focus should be on national and global changes and trends, and what consequences these will have for development of trade and industry and society. The educational programme should encourage students to identify ideas, and do something with them.

**Teacher training** is particularly important to fulfill the intentions for entrepreneurship in primary, lower and upper secondary education and training, especially through further and continuing education for teachers within this field. Teachers training is an area of high priority for the Norwegian government who will present a white paper on teacher training in the end of this year.

**3. What are the main types of policies, policy instruments and areas of activity of the innovation strategy in education (e.g., innovation grants or programmes, freedom in relation to curriculum or development of new curriculum, focus on teacher training, stakeholder engagement, focus on technology, on innovation in the teaching/learning process, etc.)?**

A new curriculum for the primary, lower secondary and upper secondary education and training was introduced in autumn 2006 through the Knowledge Promotion Reform. Here entrepreneurship is referred to as an instrument to renew education. Amongst other one central item in the new curriculum was *Collaboration with the local community* which places emphasis on collaboration between local business life and social life on instruction when it comes to giving pupils an insight into various work processes, practical work experience and knowledge of working life. It is emphasized that this will provide an insight into changes that occur in business and social life and make visible the usefulness of active participation in entrepreneurship, innovation and reorientation. Entrepreneurship, innovation, competence for change, and partnership are terms used to express the objective of the subjects, basic skills and competence-related goals.

The curricula at all levels of primary, lower and upper secondary education and training give the individual school-owner and teacher relatively great freedom to decide themselves how entrepreneurship should be organized and implemented in instruction.

**4. How are these educational innovations linked with educational research, policy and politics, teaching practice, stakeholders, the business sector, international actors (e.g., European Commission)? Please give one or two examples.**

I believe some of this is also covered by the answers to the question above and below?

**5. How is the innovation strategy governed? What are the public organisations (including ministry departments) that deal with (or steer) educational innovation in your country? What are the key private and social partners institutions involved in this area in your country?**

The strategy for entrepreneurship in education and training is governed by the ministry of education and research, the ministry of local government and regional development and the ministry of trade and industry, but many actors are involved both on a local, national and international level as illustrated in the figure below:

<b>Players involved in entrepreneurship training</b> Examples of players			
<b>Public-local</b> <ul style="list-style-type: none"> <li>• County governor</li> <li>• Municipalities</li> <li>• Renate Centre</li> <li>• Parents' organizations</li> <li>• Local public work sector</li> <li>• Local cultural and organizational life</li> <li>• Norwegian Entrepreneurship Program</li> </ul>	<b>Public-national</b> <ul style="list-style-type: none"> <li>• Min. of Educ. and Research</li> <li>• Ministry of Local Government and Regional Development</li> <li>• Min. of Trade and Industry</li> <li>• Directorate for Education and Training</li> <li>• The Research Council of Norway</li> <li>• Innovation Norway</li> <li>• The Norwegian Association of Local and Regional Authorities (KS)</li> </ul>	<b>Private-local</b> <ul style="list-style-type: none"> <li>• Junior Achievement-Young Enterprise Norway</li> <li>• The National Institute of Technology (TI)</li> <li>• First Lego League</li> <li>• Venture Cup</li> </ul>	<b>Private-national</b> <ul style="list-style-type: none"> <li>• Business sector</li> <li>• The Confederation of Norwegian Enterprise</li> <li>• Media</li> <li>• The Norwegian Confederation of Trade Unions</li> </ul>

In addition there are international players: The EU, collaborating Nordic bodies, UNESCO, JA-YE Europe, Junior Achievement Worldwide

A little about JA-YE Junior:

Since its establishment in 1997, JA-YE Norway has offered upper secondary school students the chance to participate in the Company Programme. This is a practical programme, where students are invited to start up their own business, run it, and then close it down at the end of the school year. During the school year 2003/2004, 8 000 students formed and managed 1 200 enterprises as part of this programme. In 2002 JA-YE Norway expanded its activities to involve lower secondary schools and universities. Over a 4 year period, Young Enterprise Norway will develop material, arrange courses for teachers, and promote contact between educational institutions and the business sector. The organisation is represented in all of Norway's 19 counties.

**6. What are the estimated resources (e.g., financial, human) devoted to develop and implement the innovation strategy?**

As we do not have a explicit strategy of innovation in education I am not able to answer this now.

## SWEDEN

### Innovation strategy in education

**1. Does your country have an explicit or implicit innovation strategy in education, at national or sub-national level? (please specify if explicit or implicit and refer to relevant documents if explicit)**

Sweden has an implicit innovation strategy that goes for all levels of the system of education. We would also like to point out that there is a risk in dealing with “innovation” as something special, as something that is possible to describe, concretely, in different measures and programmes etc. There is a risk that you lose what is important when talking about innovation, namely how we, within the educational system, create or maintain the scope and the stimulation for change and improvement.

In addition, a national strategy for entrepreneurship in education, including higher education, upper secondary school as well as compulsory school, is currently being considered. This strategy comprises various measures to be taken in order to raise the awareness among students about entrepreneurship and to stimulate an entrepreneurial mindset. Examples include curriculum reviews, vocational competitions and apprenticeship training.

**2. What are the main objectives of the strategy (e.g., learning/teaching achievement, cost efficiency, equity/inclusion)?**

To improve learning and teaching and to raise the effectiveness of the school system.

The overall objectives is to ensure that each student have the knowledge and competence needed to cope with adult life, participating in working life and take part to in and contribute to the development of a living democracy.

**3. What are the main types of policies, policy instruments and areas of activity of the innovation strategy in education (e.g., innovation grants or programmes, freedom in relation to curriculum or development of new curriculum, focus on teacher training, stakeholder engagement, focus on technology, on innovation in the teaching/learning process, etc.)?**

As the main strategy is implicit you have to say that there is a lack of policies for innovations in education in the country. However within this implicitly the Swedish school system contains some policies that can be related to this fact. The teachers of the compulsory school and of the secondary school have a working year that contains around 1 700 working hours. Of these 6 % is allocated for “competence development”. By the use of this time resource the teachers may initiate innovations. The state uses about 150 millions SEK per year to grant research. Sometimes innovations may appear within the research production, but most of the granted research are non innovative in relation to school work.

In the higher education area, the Ministry of Education and Research has proposed an initiative aiming at the formation of a top-notch educational program at master level with emphasis on entrepreneurship and innovation. Inspired by the entrepreneurship curriculum at Harvard Business School, USA, this educational program is supposed to equip the students to ‘think beyond the box’, explore and commercialise new ideas, and to turn research findings into business. The development of the Swedish top-notch educational program will start from the already existing programs in the field. At present there are some 40 educational programs at master level in the areas of entrepreneurship and innovation, offered at 20 different universities and university colleges.

**4. How are these educational innovations linked with educational research, policy and politics, teaching practice, stakeholders, the business sector, international actors (e.g., European Commission)? Please give one or two examples.**

Only loose and random couplings exist between educational innovations and the kind of actors that is described. There has for instance been a period in the late 1990's and early 2000's when a more regular co-operation appeared between schools and business life directed towards the use of computers in education.

This kind of linkage between education and, for instance business or society at large, are first and foremost the responsibility of universities. Through "offices of external relations" or similar, they work with local or regional companies which are interested in allowing students to undertake field studies at the company, for instance. At some universities, this works very well, while at others it is less developed. In the research and innovation bill of 2008, it is proposed that Swedish universities are obliged to support utilization of research, and as such competence and facilities are built up, this will surely benefit entrepreneurial activities among the students too.

**5. How is the innovation strategy governed? What are the public organisations (including ministry departments) that deal with (or steer) educational innovation in your country? What are the key private and social partners institutions involved in this area in your country?**

The implicit innovation strategy that exists in Sweden is not governed.

**6. What are the estimated resources (e.g., financial, human) devoted to develop and implement the innovation strategy?**

The costs of non-governed implicit strategy of the country is not possible to estimate.

## TURKEY

### Innovation strategy in education

**1. Does your country have an explicit or implicit innovation strategy in education, at national or sub-national level? (please specify if explicit or implicit and refer to relevant documents if explicit)**

Turkey has an implicit innovation strategy. There are different stakeholders participating into the process of implementing the strategy of innovation in the field of education in Turkey. Ministry of National Education (MoNE) of Turkey cooperates with different international organizations, like European Union (EU) and World Bank (WB), to realize the innovation process with required and sustainable financial resources. Board of Education, General Directorate of Education Technologies, Department for Educational Research and Development and the Department for Projects Coordination Centre of MoNE are acting as the driving forces of Turkish educational system's innovation activities. The serious increase of the budget of the research and development works in last two years must be specifically emphasized. The Scientific and Technological Research Council of Turkey (TUBITAK) is the responsible institution of the use of that increased budget at national level.

**2. What are the main objectives of the strategy (e.g., learning/teaching achievement, cost efficiency, equity/inclusion)?**

Catching the EU and world standards on the educated human resources is one of the important targets of innovation endeavors in Turkey. Since the 90's, with an increased pace in 2000's, objectives set about equity and inclusion in education by Government and by MoNE. These objectives constitute a great part of innovation strategy of MoNE. The results of international surveys like PISA, TIMSS and PIRLS direct policy makers to take steps towards improving those results.

**3. What are the main types of policies, policy instruments and areas of activity of the innovation strategy in education (e.g., innovation grants or programmes, freedom in relation to curriculum or development of new curriculum, focus on teacher training, stakeholder engagement, focus on technology, on innovation in the teaching/learning process, etc.)?**

Since the early 2000's, teacher qualifications are identified over again from the beginning comprehensively and these newly defined qualifications are shared with teacher training institutions so that they should modify curriculum accordingly.

**4. How are these educational innovations linked with educational research, policy and politics, teaching practice, stakeholders, the business sector, international actors (e.g., European Commission)? Please give one or two examples.**

Government programmes, development plans of State Planning Organization (DPT) and the targets set out by MoNE are driving powers of implementing the innovation strategies in Turkey. In this regard, the educational innovations rely on such factors. Turkey's accession period into EU, international surveys like OECD's PISA, IEA's TIMSS and PIRLS, national exams like ÖSS (Student Selection Examination) conducted by ÖSYM (Student Selection and Placement Centre), Student Selection Examination for Secondary Schools (OKS) conducted by General Directorate of Education Technologies (EGI-TEK), Assessment Examination of Student Success (ÖBBS) conducted by Department for Educational Research and Innovation (EARGED) of MoNE.

MoNE supports innovation works mainly by supplying human resources. Curriculum developments, preparation of guiding books for teachers and text books students, in-service training courses for teachers are good examples of MoNE's innovative endeavors.

**5. How is the innovation strategy governed? What are the public organisations (including ministry departments) that deal with (or steer) educational innovation in your country? What are the key private and social partners institutions involved in this area in your country?**

There are several departments of MoNE that deal with educational innovation: Board of Education, Department for Projects Coordination Centre, Department for Educational Research and Development, General Directorate of Education Technologies, Department for in-Service Training, General Directorate of Primary Education, General Directorate of Secondary Education, General Directorates of Vocational and Technical Education. Some NGO's are cooperating with MoNE in its innovation works. Mother and Child Education Foundation (ACEV) is an example of such organizations.

**6. What are the estimated resources (e.g., financial, human) devoted to develop and implement the innovation strategy?**

MoNE receives grants and loans from international organizations like EU and WB since the beginning of 90's to realize educational innovations. The estimated amount of financial resources devoted to educational innovations has been 820 million € for about ten years.