



MINISTRY OF EDUCATION AND RESEARCH
MINISTRY OF LOCAL GOVERNMENT AND REGIONAL DEVELOPMENT
MINISTRY OF TRADE AND INDUSTRY

Norway

Action Plan

Entrepreneurship in Education and Training

– from compulsory school to higher education 2009–2014





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Foreword

If the Norwegian welfare society is to develop, it is essential to provide everyone with opportunities for taking high quality education. Throughout the course of their education, each pupil and student should acquire attitudes, knowledge and skills that can help develop society. Knowledge and education are also positive factors in their own right as they ensure personal and social development.

Children and young people are by nature inquisitive and curious, qualities that are also characteristic of prominent researchers and energetic entrepreneurs. Curiosity must be stimulated if it is to develop further. The education and training system is vital for the development of a culture for entrepreneurship and a creative society in which people's search for knowledge and their creative urge are appreciated. Training in entrepreneurship provides pupils and students with an opportunity for using their knowledge and their abilities in untraditional ways. Entrepreneurship can promote practical learning methods in educational situations and so help the individual achieve increased learning outcomes. This is important for providing the country with the knowledgeable and competent work force that is crucial for innovation and wealth creation. In other words, society depends on creative people who turn ideas into new enterprises or make improvements within existing en-

terprises. Considering the current financial recession, it is essential to facilitate wealth creation and innovation.

Training in entrepreneurship can help pupils and students become acquainted with their local working and business life and the challenges the local community is facing. Activating children and young people within the community builds local identity and commitment. These young people can also experience the demands of working and business life and can see its inherent opportunities. The education and training system and working life must therefore become better at seeing the opportunities that lie in interaction and collaboration. The Government therefore believes it to be important to implement training in entrepreneurship throughout the country, adapted to local and regional challenges, using existing workplaces as learning contexts.

Norway has received international accolade for our work on entrepreneurship in education. A major factor in this is the strategy *See the Opportunities and Make them Work! – Strategic Plan for Entrepreneurship in the Education System (2004-2008)*. The Government now sees the need both to develop further and to expand efforts in this field by presenting a new Action Plan with special emphasis on higher education.



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1 Background, definitions and target groups

1.1 Introduction

It is today's pupils and students that will create the values and workplaces of the future. In Report to the Storting (White Paper) no. 44 (2008-2009) *Education Strategy*, the Government proposes measures designed to make education more realistic and practical to ensure a population which is flexible and well-qualified for working life. Strengthening a culture for entrepreneurship and collaboration between education and training and working life are essential measures to achieve this end.

See the Opportunities and Make them Work – strategy for entrepreneurship in education and training was launched in 2004 and revised in 2006 in connection with the implementation of the Knowledge Promotion. The strategy's implementation period lapsed in 2008. The plan was evaluated in 2008¹, cf. Box 1. The results of the evaluation indicated among other things a marked increase in the number of pupils and students that have taken part in different types of entrepreneurship training, especially in primary and secondary education. Norway was the first country to present a national strategy for entrepreneurship in education and training, for which there has also been international acclaim. The cross-ministerial collaboration has been given a lot of positive attention and also forms the framework for work on this Action Plan. In addition the evaluation concluded that it is necessary to expand efforts in a number of areas so as to promote entrepreneurship in teaching and learning on all levels.

This *Action Plan for Entrepreneurship in Education and Training* places emphasis on higher education. We must develop an education system that to a greater degree gives the pupils and students of today knowledge and skills adapted to the challenges of the future.

The objective of the Plan is to *strengthen the quality of and the scope of entrepreneurship education and training at all levels and areas of the education system. Internationally Norway shall be a leading force when it comes to entrepreneurship in education and training.*

1 KPB Report 4 – 2008: Evaluation of the Government's Strategic Plan for Entrepreneurship in Education 2004-2008.

1.2 Definition of Entrepreneurship in Education and Training

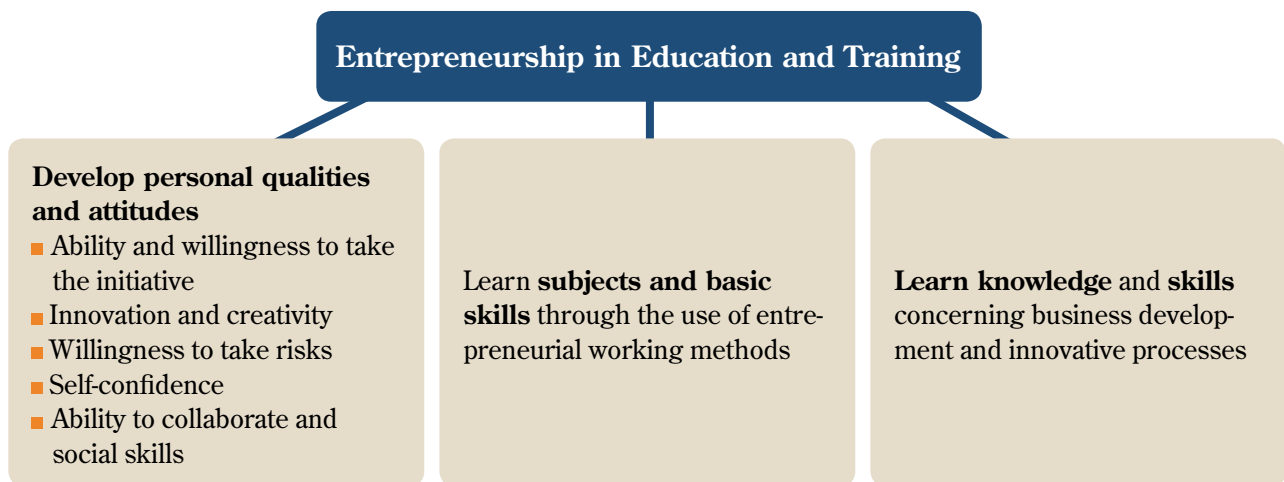
Entrepreneurship is concerned with establishing new activities and about being able to perceive new opportunities and making them work in a number of social areas². Entrepreneurship competence is relevant for all areas of working and business life, in both new and established activities and enterprises. Voluntary organisations/associations, foreign aid and development work and the cultural sector are also important areas of society where entrepreneurship and innovational processes are relevant. The Ministry of Education and Research, the Ministry of Trade and Industry and the Ministry of Local Government and Regional Development believe it is important to make entrepreneurship in education and training a broad priority area.

« *Competence in entrepreneurship is relevant for all areas of working and business life, in both new and established activities and enterprises*

Entrepreneurship in education and training may be both theoretically and practically oriented. Training in entrepreneurship can be organised as a separate subject or be integrated as a way of working in other subjects. Entrepreneurship can be a tool and a working method to stimulate learning in different subjects and in basic skills. Entrepreneurship in education and training may also further develop personal characteristics and attitudes. The training may focus on imparting knowledge on how to start one's own business and about innovative and ground-breaking processes in existing enterprises.

The above figure can be used as an illustration of this.

2 This description of entrepreneurship in education is based on definitions the Government has used in for example Report to the Storting (White Paper) no. 7 (2008–2009) *An Innovative and Sustainable Norway: Entrepreneurship is a dynamic and social process where individuals, alone or in collaboration, identify opportunities for innovation and act upon these by transforming ideas into practical and targeted activities, whether in a social, cultural or economic context.*



1.3 Limitation and Target Groups

This Action Plan deals with the whole of the education system but its main emphasis is on higher education. The Plan also touches on research and commercialisation. In addition the Action Plan will follow up the strategic plan *See the Opportunities and Make them Work!*, continuing current efforts in primary and secondary education linked to the Knowledge Promotion and implementing new measures.

The main target groups for this Action Plan are leaders and owners of educational institutions, teaching staff, as well as pupils and students.

Entrepreneurship in education and training must comply with the overarching fundamental principle in Norwegian educational policy: that it must be given broad priority and made available for everyone, adapted to the individual's abilities and needs. How the training in entrepreneurship actually takes place, is organised by the individual educational institution. However, this work requires collaboration and efforts from a number of parties, including:

- Private actors: business and industry, and commercial and industrial organisations
- Organisations: pupil and student organisations, the social partners, Junior Achievement-Young Enterprise Norway (JA-YE Norway), START-Norway and the Norwegian Association of Local and Regional Authorities (KS)
- Public actors: Innovation Norway, the Research Council of Norway, SIVA, municipalities, county authorities and other regional development actors, the Directorate of Education and Training, the Ministry of Education and Research, the Ministry of Trade and Industry and the Ministry of Local Government and Regional Development

1.4 Policy Instruments in the Education System

When developing and carrying out training in entrepreneurship, the organisation and steering structure of the various elements of the education system must be considered. Primary and lower secondary education, upper secondary education and training, vocational college education, universities and university colleges are all governed and organised differently.

Primary and secondary education and training: The subject curricula are regulations that the schools are obliged to follow. The Core Curriculum, the Quality Framework and the subject curricula together form the basis for the schools' planning of how to organise and carry out their teaching. This is determined locally (school owner/school).

Vocational College Education: Vocational technical colleges make their own decisions on which courses of study they wish to offer, but must apply to NOKUT³ for accreditation of the various programmes. As a consequence of the Administration Reform, as of 1 January 2010 the responsibility for running and funding vocational technical colleges has been transferred from the Ministry of Education and Research to the county authorities. The Tertiary Vocational Education Act⁴ states that the county authorities are responsible for ensuring that there is accredited tertiary vocational education that addresses local, regional and national

³ The Norwegian Agency for Quality Assurance in Education

⁴ The organisation and governance of tertiary vocational education is anchored in the Tertiary Vocational Education with attendant regulations concerning accreditation pursuant to the Tertiary Vocational Education Act: The Act concerning Tertiary Vocational Education of 20 June 2003 with attendant regulations no. 2008-04-23-391 concerning accreditation pursuant to the Tertiary Vocational Education Act. The Tertiary Vocational Education Act has been revised in connection with the Administration Reform, and the new Act will be in force as of 1 January 2010.

BOX 1: Recommendations from the evaluation of the Strategy: – See the Opportunities – and Make them Work!

The National Centre for Innovation and Entrepreneurship in Bodø (KPB) has carried out an evaluation of the Strategy that has been in force between 2004 and 2008. This evaluation shows that Norway has received considerable international attention for the country's work on entrepreneurship in education and training. Experiences from work on entrepreneurship in education and training in the strategic plan period indicate that collaboration between the educational institutions, business and industry and local and national public authorities has increased. There has been a considerable increase in the number of pupils and students who have taken part in training in entrepreneurship. The evaluation report contains the following recommendations for further work on entrepreneurship in education and training:

- 1) Ensure continuity in work that has already been started
- 2) Continue the inter-ministerial ownership
- 3) Strengthen teachers' and school leaders' competence in entrepreneurship
- 4) Anchor entrepreneurship as school owners' responsibility
- 5) Develop and disseminate teaching aids and guidance material
- 6) Resource bank for dissemination of experiences
- 7) Improved knowledge base through research
- 8) Continued support for Junior Achievement -Young Enterprise Norway (JA-YE-Norway)
- 9) Continue efforts in the shape of an action plan with a separate budget

competence needs in prioritised areas of society. This means that in connection with the administration of funds for vocational technical colleges the county authorities may issue guidelines as which kinds of programmes should be offered.

Higher education: The Act relating to Universities and University Colleges⁵ states that universities and university colleges cannot be “*instructed regarding the academic content of their teaching and the content of research or artistic or scientific development work*”. This means that universities and university colleges cannot be given instructions about the methods and content of the courses they teach. In some educational study programmes the Ministry of Education and Research determines National Curriculum Regulations that specify the content of the programmes at an overarching level. This applies mainly within teacher education, health and social care education and engineering education.

In March 2009 the Ministry of Education and Research determined a national qualifications framework for higher education. This makes it clear which learning outcomes the candidates are to have attained on completion of the various levels (bachelor, master and PhD), specified according to knowledge, skills and general qualifications, and it states that higher education is to provide qualifications in innovation. The qualifications framework is to be implemented by 2012. Pursuant to the Act

relating to universities and university colleges it is up to the individual institution to adapt the qualifications framework.

◀ *It will now be up to the national, regional and local authorities and educational institutions to follow up efforts concerning entrepreneurship in education and training in accordance with the steering principles of the education system*

The Government has now anchored work on entrepreneurship in education and training in three Reports to the Storting (White Papers) in addition to this Action Plan.⁶ It will now be up to the national, regional and local authorities and educational institutions to follow up efforts concerning entrepreneurship in education and training in accordance with the steering principles of the education system and in accordance with local, regional and national challenges and needs. The educational institutions must assess how work on entrepreneurship can be included in their plans and strategies and in how their education and training is carried out.

⁵ Act no. 15 of 1 April 2005 relating to universities and university colleges, section 1 – 5: Academic freedom and responsibility no.3

⁶ White Paper no. 7 (2008-2009): *An Innovative and Sustainable Norway*, White Paper no. 25 (2008-2009) *Local Growth and Belief in the Future* and White Paper no. 44 (2008-2009) *Education Strategy*



2 Status and Challenges for Entrepreneurship in Education and Training

2.1 Introduction

Since 2004 entrepreneurship in education and training has been a prioritised area in Norwegian educational policy, and Norway has been a leading force in Europe. Entrepreneurship has been used actively at some schools, university colleges and universities for a long time, and over the last few years there has been a significant increase in various types of entrepreneurship education all over the country. Even though there has been considerable progress, there are still challenges and work on entrepreneurship will continue to be in constant development. This chapter presents a short summary of the status of entrepreneurship education and training and different challenges.

2.2 International Context

The promotion of entrepreneurship in education and training is an area that has been given broad priority in the EU. The European Commission has defined entrepreneurship as one of eight key competences in education and training. The Council of the European Union has recently determined four strategic goals for collaboration in education and training, one of which is to promote creativity, innovation and entrepreneurship at all educational levels. Emphasis is here placed on creativity and innovation being prerequisites for wealth creation and for Europe being internationally competitive. Collaboration between different educational levels and working and business life is meant to help promote innovation and entrepreneurship in all forms of education.

Due to the emphasis in the Lisbon process on economic growth, entrepreneurship and innovation have been given increased attention within the education systems. The EU member states have committed themselves to increasing their efforts for informal learning, to developing flexible study courses that promote mobility and to encouraging collaboration between universities and working life on innovation and the transfer of knowledge.

During recent years there has been increased

national and international emphasis on the interaction that takes place between higher education, research and innovation, the so-called Knowledge Triangle. In a number of Communications, the European Commission stresses that the Knowledge Triangle is considered essential if the objectives of the Lisbon Strategy are to be achieved, and the Knowledge Triangle has been given an increasingly central position in the EU's policy design. It is an objective that cooperation between the stakeholders is to be promoted on all levels, regionally, nationally and within the EU. A major initiative to this end was the establishment of the European Institute for Innovation and Technology (EIT) in 2008. The EIT is to promote and integrate higher education, research and innovation in major areas of society.

◀ The EU has defined entrepreneurship as one of eight key competences in education and training

In 2008 an expert group appointed by the European Commission presented its report *Entrepreneurship in Higher Education, especially within Non-business Studies*⁷. This states that the education system has an important role to play in the promotion of entrepreneurial attitudes and behaviour. The expert group also believes that the benefits of education and training in entrepreneurship are not limited to the establishment of enterprises, innovative projects and new jobs. Entrepreneurship is concerned with the individual's ability to transfer ideas to action. As a qualification it is therefore suitable for everyone, and can also help young people become more creative and give them greater self-confidence.

In the autumn of 2006 the Norwegian authorities in collaboration with the European Commission organised the conference *Entrepreneurship Educa-*

⁷ European Commission, Enterprise and Industry Directorate-General 2008: *Entrepreneurship in Higher Education, especially in Non-business Studies*.

tion in Europe – Fostering Entrepreneurial Mindsets through Education and Learning. As a result of this conference came *The Oslo Agenda for Entrepreneurship Education in Europe*⁸. This document contains a number of proposed measures adapted to different types of stakeholders, where responsible actors can pick out measures at the relevant level and adapt them to local conditions.

The EU has launched 2009 as the European Year for Creativity and Innovation, with the motto “Think. Create. Innovate.” The objective is to raise awareness of the importance of creativity for the innovation ability. In April 2009 the Nordic Council of Ministers entered into an agreement on strengthening collaboration in educational matters in order to promote a culture for entrepreneurship in the Nordic countries.

2.3 Higher Education

Entrepreneurship, innovation and creativity are concepts that have become embedded in Norwegian higher education, especially over the last 10 years. In higher education the emphasis is on developing the students’ knowledge about and skills in innovation processes, establishing enterprises and business development.

All university colleges and universities in Norway send annual reports on their activities to the Database for Statistics on Higher Education (DBH)⁹. In 2008, 21 of the state university colleges and universities reported that they offered programmes of study in entrepreneurship, varying from individual courses to complete master’s degree programmes. Among these there are courses and degree programmes for teachers, economists, technologists and the tourism trade as well as cross-disciplinary courses. In addition, the universities and university colleges submit reports on the quantity of their patents and commercialisa-

INSTITUTION	ACADEMIC TITLE	NO. OF CREDITS
The Norwegian University of Science and Technology (NTNU)	NTNU’s School of Entrepreneurship, master’s degree	120 credits
University of Tromsø	Master of Science in Business Creation and Entrepreneurship	120 credits
Gjøvik University College	Technological Design and Management, bachelor’s degree	180 credits
Ålesund University College	Innovation Management and entrepreneurship, bachelor’s degree	180 credits
Hedmark University College	Innovation, Entrepreneurship and Business Development, one-year programme	60 credits
University of Oslo	Norwegian Entrepreneurship programme ¹⁰	30 credits
Bodø University College	Pedagogical Entrepreneurship for Teachers and Pre-school Teachers	30 credits
University of Agder	Entrepreneurship and Innovation in Schools	20 credits
University of Agder	Entrepreneurship for Students of Arts and Crafts	10 credits
University of Stavanger	Entrepreneurship in a Technological Enterprise	10 credits
University of Stavanger	Business Administration and Entrepreneurship	10 credits

Table 1: Examples of different types of courses in entrepreneurship and innovation in higher education

⁹ An overview of studies in entrepreneurship can be found both in the applications handbook of the Norwegian Universities and Colleges Admission Service (NUCAS), at www.samordnaopptak.no and in a collected report in the Ministry of Education and Research’s *Status Report for Institutions of Higher Education 2009*, cf. www.regjeringen.no/kd

¹⁰ Administered by the University of Oslo but offered at several institutions all over the country, cf. <http://www.grunderskolen.no/inenglish.php>

⁸ http://ec.europa.eu/enterprise/policies/sme/files/support_measures/training_education/doc/oslo_agenda_final_en.pdf

tions. These reports indicate a growth in activities and show that universities and university colleges are increasingly considering innovation and entrepreneurship as an important part of the studies they offer. Commercialisation is being given more priority. The reports also show that the activities registered within entrepreneurship and innovation display considerable diversity. The Ministry of Education and Research is positive to the development of a diversity of programmes of study in innovation and entrepreneurship. The criteria for reports on entrepreneurship and innovation from universities and university colleges must be clarified so that it is easier to obtain an overview of the scope and development of this area.¹⁰

In recent years a number of universities and university colleges have established separate units for entrepreneurship, creativity and innovation, such as the Centre for Entrepreneurship at the University of Oslo, the University of Stavanger, the University of Agder and the Norwegian University of Science and Technology (NTNU). Bergen University College has established a Centre of Innovation in collaboration with the Norwegian School of Economics and Business Administration and the University of Bergen. As a follow-up to this, some institutions have established different variants of pre-incubators or incubators¹¹. The University of Stavanger, for example, has established a student incubator, Oslo University College has a pre-incubator and NTNU has an innovation centre. Doctoral degrees have been awarded in the field of entrepreneurship and professorships have been established at the University of Oslo, NTNU, the University of Agder and Bodø University College, among others.

Despite good examples, there are a number of institutions that do not offer any courses in innovation and entrepreneurship. In connection with the implementation of the qualifications framework for higher education, innovation competence must be integrated in all subject areas at all levels by 2012. So innovation and entrepreneurship in higher education must be developed, both as disciplines in their own right and as integrated topics in other study programmes.

Entrepreneurship in higher education is both a discipline and working methods into which there

BOX 2: NTNU's School of Entrepreneurship

NTNU's School of Entrepreneurship provides a two-year master's degree programme in technology with entrepreneurship that combines theory and practice. At the School of Entrepreneurship students are given the opportunity to commercialise their own or other people's technology-based business ideas. Groups of two to four students from different technological backgrounds work together in a team. The School of Entrepreneurship gives students the opportunity to create their own workplace and approximately 1/3 of the students continue in their own enterprise after finishing their studies. The students have an optional stay abroad at Boston University in the summer semester between years 1 and 2, where they are able to test start-up projects in an international business environment. Through the NTNU Entrepreneurship Centre, the Department of Industrial Economics and Technology Management, the Entrepreneur School's Alumni Association, the Students' Association and the School of Entrepreneurship's mentor programme, the students gain access to a broad international network in business development, research and industry.

More information can be found at www.ntnu.no

is increasing research.¹² There has been a gradual growth in different types of literature on how to teach entrepreneurship. In addition, Junior Achievement-Young Enterprise Norway (JA-YE-Norway) has commissioned reports from Eastern Norway Research Foundation and Nord-Trøndelag Research Institute, among others, which have addressed the effect of designated training programmes and activities. These are useful when it comes to further developing the activities of JA-YE Norway and for increasing the understanding of the effects of entrepreneurship in education and training. The Ministry of Education and Research has however received reports that there is little literature about the different teaching methods used in entrepreneurship and about their impact in higher education. It is also necessary to acquire more knowledge about how entrepreneurship can be integrated in higher education.

¹¹ An incubator helps develop innovative enterprises in an early stage by using the competence and network of the incubator. Incubators often provide administrative services and office space.

¹² OECD 2009: Working Party on SMEs and Entrepreneurship (WPS-MEE). *Evaluation of programmes concerning education for Entrepreneurship*. CFE/SME (2008)4/FINAL

«Innovation competence must be integrated in all degree programmes in higher education by 2012

2.3.1 Teacher Education

The *National Curriculum for Knowledge Promotion* contains expectations that pupils and apprentices have acquired competence linked to entrepreneurship. For this reason the Directorate of Education and Training has each year since 2006 had approximately NOK 2 mill to allocate for the purpose and has invited applications for funding from university colleges and universities with teacher education programmes that focus on:

- developing courses where training in entrepreneurship is integrated in *the teacher education programme* with focus on pedagogical principles and appropriate tools
- offering supplementary education courses, in-service training schemes, experience exchanges or other types of competence development

BOX 3: Entrepreneurship for Students of Arts and Crafts

The University of Agder offers students of arts and crafts a 10 credits course in entrepreneurship. A similar course is also offered to students of health and social care subjects, humanities and technology. The objective of the course is to be able to understand an entrepreneur's everyday life through

- knowing the value of ideas, how ideas can become opportunities and what is necessary to realise one's ideas and actually establish an enterprise
- understanding how one's own professionalism can form a basis for one's own enterprise and further wealth creation
- having a conscious awareness of the significance of entrepreneurship for personal development and as a community builder

The course will provide knowledge about products, markets and customers, among other things. It will also give students of arts and crafts competence in developing and establishing new culture-based enterprises. The students are to develop a business plan for a new enterprise taking their own specialisation as a starting point.

More information is to be found at: www.uia.no

for teachers and school leaders in *primary and secondary education and training*

In 2009 a total of 23 applications were submitted, for a total of NOK 8 mill. The Directorate has allocated funds to 13 of the teacher education institutions. The number of applications shows that there is a sound foundation for competence development in entrepreneurship under the aegis of the teacher education institutions. The Ministry of Education and Research intends to continue this measure.

As part of the follow-up to Report to the Storting (White Paper) no. 11 (2008–2009) *The Teacher - the Role and the Education*, there will be a reorganisation of general teacher education. A new national curriculum for teacher education for primary and lower secondary education will be drawn up. In this connection, consideration will among other things be given to how the qualifications framework is to be integrated in the new teacher education programmes, including competence about innovation and creativity.

2.3.2 Intellectual Property Rights

In 2002 the Act respecting the right to employees' inventions was amended (with these amendments being in force as of 1 January 2003) to give universities and university colleges the right, in certain circumstances, to acquire from their employees the rights to an invention for which a patent may be taken out. The Act now equalises academic staff at universities and university colleges with the staff of other employers. If such rights are taken over by the employer, the employee is entitled to compensation.

Business and industry and the research communities need competence in the field of intellectual property rights for the protection of values and for strategic use in business development

The Act applies to students employed at an institution, for instance as research assistants, on a par with other employees. In principle, in the case of students who are not employed at an institution, the general rule applies that it is the person/s who have made the invention that have the right to apply for a patent. If the institution or a third party, for

BOX 4: Education in Entrepreneurship for Teachers and Pre-school Teachers

Bodø University College offers several entrepreneurship programmes of studies for the education sector in collaboration with various partners. In 2009 this includes modules that together make up a one-year course in entrepreneurship.

The "Incubator Project" is a new study programme that constitutes the first 30 credits in the one-year programme in entrepreneurship. The objective of this 3-year project is to initiate development work at the individual school with the school defining its own innovation objective and embedding this objective both in the school's plan of activities and strategic development plan, as well as both a group of teachers and the school leaders taking part in courses (for 3 semesters). This is supported by a head teacher network among the participating schools. The whole

of the teaching staff at each school is given follow-up and guidance from the university college and various other collaboration parties.

The objectives for the course are to help schools increase their understanding of entrepreneurship as a goal and method for the teaching of children and young people, as well as focusing on what it means to facilitate entrepreneurial and creative learning processes. The course is based on a vision that it is possible to develop active schools and local communities where children and young people learn to accept responsibility and to develop their ability to take initiatives and use their innovative skills and creativity in a meaningful learning context. In the long term this will increase the individual's ability for innovation and new activities. More information can be found at: www.hibo.no

instance an enterprise that funds and/or takes part in a research project, is to have the right to take over the invention, an agreement to this end must be entered into between the student and the institution or third party in question. It is normally not sufficient to enter into an agreement between the institution and a third party as such an agreement would not automatically bind the student.¹³

The educational institutions, staff and students should have a conscious awareness of the rights that prevail and any necessity for agreements when carrying out concrete projects. In an educational context, this is especially relevant when students carry out projects on behalf of commercial actors, for university and university college staff and between students concerning projects with commercial potential. Consequently the educational institutions should consider designing routines for improving the information to students on intellectual property rights.

Business and industry and the research communities need competence in the field of intellectual property rights for the protection of values and for strategic use in business development. Currently Norwegian universities and university colleges offer a limited number of courses in intellectual

property rights. The Ministry of Education and Research and the Ministry of Trade and Industry are of the opinion that increased competence in this field is required.

Both the Research Council of Norway and the universities have requested the Ministry of Education and Research to draw up a national policy for dealing with intellectual property rights. In Report to the Storting (White Paper) no. 30 (2008–2009) *Climate for Research* the Government proposes to assess the need for national principles for dealing with intellectual property rights.

2.3.3 Commercialisation activities at universities and university colleges

The commercialisation of research findings ensures that the research is useful for society and that it is used when establishing enterprises, licensing and selling technology, and so on. In this manner research-based ideas from universities and university colleges can be adapted into processes, services or goods that can be sold in a market or contribute to the further development of existing processes, services or goods.

 *The commercialisation of research findings ensures that the research is of use for society*

The 2002 amendments to the Act respecting the right to employees' inventions meant that the educational institutions needed to change, and the

¹³ Other relevant issues apply in different contexts, e.g. in externally funded projects, commissioned research, project collaboration with business life, intellectual achievements, databases, and so on. More information about students' rights to their own work can be found in Complex 1/04: Opphavsrettslige problemstillinger ved universitetene og høyskolene (*Copyright Issues at Universities and University Colleges*)

BOX 5: Master of Science in Business Creation and Entrepreneurship

The University of Tromsø offers a study programme leading to Master of Science in Business Creation and Entrepreneurship. This is a 2-year master's programme which is carried out in collaboration with Chalmers University of Technology in Gothenburg, Sweden. Intellectual property rights are taught as part of the master's programme.

The objectives of the study programme are:

- The establishment of knowledge-based enterprises through cross-disciplinary work. Technological, economic, managerial and legal competence is used to establish an understanding of innovations, products and market opportunities in different areas and how to exploit the interaction between them
- Knowledge about regional innovation systems and regulatory structures
- The effective management of small-scale projects with short deadlines and high growth potential
- The management and leadership of complex innovation processes and teams in interaction with research, market assessment and product development
- Commercial knowledge in bioscience or telemedicine

More information can be found on: www.uit.no

universities have established separate Technology Transfer Offices (TTOs) to contribute to the commercialisation of research findings. Some university colleges have also started working together to establish this kind of office. TTOs are mainly concerned with the commercialisation of the research results from the staff, but will also to varying degrees work with students.

A number of ministries¹⁴ grant funds to the programme called Commercialisation of R&D Results (FORNY) run by the Research Council of Norway. The programme's main objective is to increase wealth creation in Norway by commercialising research results from publicly funded research institutions. The FORNY programme has been evaluated in 2009.¹⁵ The evaluation shows that the programme has succeeded in focusing on ideas and

¹⁴ The Ministry of Trade and Industry, the Ministry of Local and Regional Affairs, the Ministry of Education and Research, the Ministry of Fisheries and Coastal Affairs and the Ministry of Agriculture and Food

¹⁵ NIFU STEP, Report 19/2009

commercialisation projects that are highly R&D intensive and innovative. The evaluation draws the conclusion that despite this, results are modest when compared with the intentions of the FORNY programme. There are few enterprises that have grown large, and few enterprises that have a significant growth potential compared with international examples. The conclusion is that there is a need for a programme that supports the commercialisation of research results. Expectations should be realistic but ambitions should be high, especially if commercialisation is perceived in a broader sense than merely enterprises and licenses. The evaluation shows that generally speaking considerable funds have been spent on measures for mobilising students, with a long-term perspective on the commercialisation of research results.

In order to facilitate increased commercialisation of research results, the Government will initiate new efforts for commercialisation as a follow-up to the FORNY programme, in line with White Paper no. 30 (2008-2009) *Climate for Research*.

2.3.4 Students about entrepreneurship in education and training

In 2009 Innovation Norway and the Research Council of Norway carried out a survey among students about their knowledge, attitudes, motivation and barriers when it comes to entrepreneurship¹⁶. The survey shows that the students are eager to start new enterprises and have concrete ideas that they wish to realise. About one half of the respondents wish to start their own company. In the opinion of the students, running one's own enterprise confers status and freedom. Their main motivation for starting their own enterprise is to be able to work with something they are committed to. For them the opportunity of making a lot of money is not considered an especially motivating factor.

« The students main motivation for starting their own enterprise is to be able to work with something they are committed to.»

Students who have had entrepreneurship as part of their education and training stand out from the others in a positive way as almost twice as many have concrete plans for starting their own enter-

¹⁶ Perduco 2009: Student Survey 2009, Carried out for the Research Council of Norway and Innovation Norway

prise compared with students in general. However, the survey shows that very few have been offered such an opportunity.

The students consider the lack of funding to be the largest obstacle for starting one's own enterprise. Other perceived obstacles are a fear of going bankrupt and a lack of knowledge about entrepreneurship. The survey shows that more male than female students say they have knowledge about entrepreneurship, and female students can see more obstacles than male ones do. Whether a person has grown up in urban districts or more rural ones, has little significance for knowledge, attitudes, motivation or obstacles for establishing an enterprise.

In 2007 Rambøll Management AS carried out a survey of the competence needs of young entrepreneurs and how the services of Innovation Norway are adapted to these. This survey shows that young entrepreneurs often need:

- Strategic monitoring throughout the establishment process
- Competence in topics such as business plan development and marketing
- Networks orientated towards enterprises
- Follow-up from social network and family
- Financial support schemes and welfare schemes

The survey also points out that as entrepreneurship in education and training is now given strong emphasis, it will entail greater demands in the future on the public support system (Innovation Norway) and the counselling services of municipalities and county authorities in order to improve the transition from studies to an existence as an entrepreneur.

2.4 Primary and secondary education and training

Entrepreneurship in primary and secondary education and training is mentioned in the *National Curriculum for Knowledge Promotion in Primary and Secondary Education and Training*. Entrepreneurship for both compulsory education and for upper secondary education and training is embedded in the *Core Curriculum*, the *Quality Framework* and in the various *subject curricula*. A more detailed description can be found in the previous strategy *See the Opportunities and Make them Work!* The *Knowledge Promotion* is currently being monitored and a research-based evaluation of the *Knowledge Promotion* is being carried out in the period of 2006 – 2011. This evaluation is to clarify and document to which extent the challenges facing primary and secondary education and training and the intentions of the reform are being followed and give actual results.

The broad approach to entrepreneurship in education and training which forms the basis for the Action Plan makes it difficult to chart the extent of entrepreneurship in primary and secondary education and training. However, reports and examples show that there is increasing interest in entrepreneurship in education and training and that entrepreneurship is taught in many different ways. For instance, in the autumn of 2007 a new programme subject called Entrepreneurship and Business Development was established in upper secondary education.

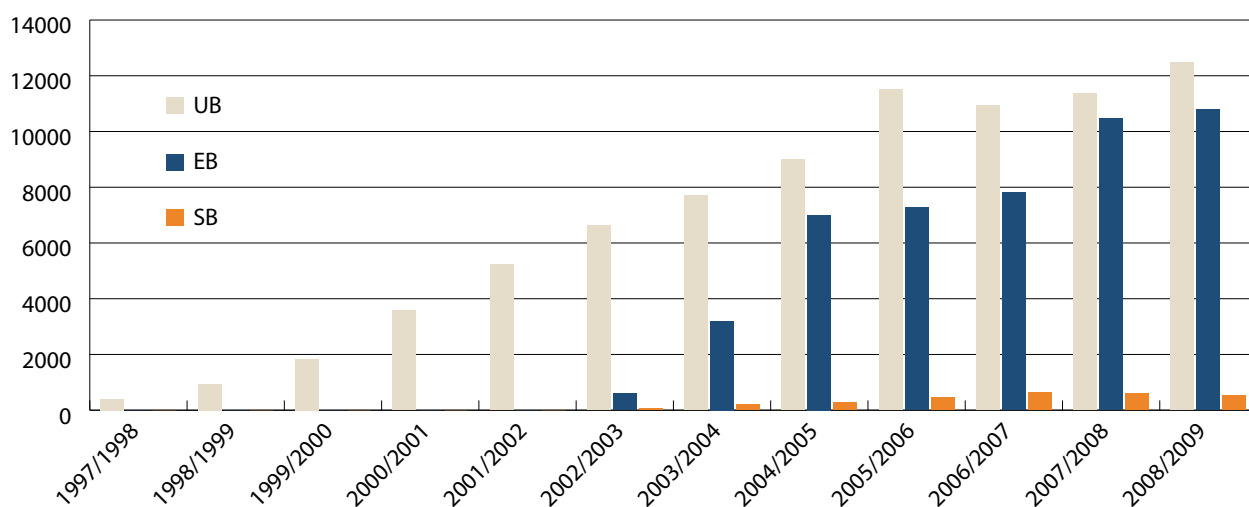


Figure 1 shows the development in the “mini-companies”: Pupils’ Enterprise (EB) for primary and lower secondary education, Company Programme (UB) for upper secondary education and training and Graduate Programme (SB) for higher education. Source: JA-YE Norway.

BOX 6: Junior Achievement - Young Enterprise (JA-YE Norway)

Junior Achievement - Young Enterprise (JA-YE Norway) is organised as an NGO, and is a private provider of entrepreneurship education in Norway. JA-YE Norway's activities have expanded greatly since the organisation was established in 1997, and JA-YE Norway now offers programmes for all levels of education and training – from kindergartens to higher education.

JA-YE Norway is part of an extensive international network based on the same learning platform. There is an especially broad collaboration in Europe between 40 countries that are members of Junior Achievement – Young Enterprise Europe (JA-YE Europe). This provides opportunities for giving young people experience and understanding of the significance of contact across borders.

JA-YE Norway has five criteria for identifying and quality assuring programmes promoting pupils' and students' entrepreneurial competence: they are to promote creative processes; they are to be based on active learning on the part of the pupils; they must be cross-disciplinary; they must strengthen collaboration between the school and the local community; and they must focus on promoting financial, social or cultural wealth creation.

JA-YE Norway's programmes can be divided into 3 categories:

1. Workshops

Innovation camps for lower secondary education, upper secondary education and training and higher education, and SMART for the upper primary level. These programmes are carried out in collaboration with local business and working life. The programmes give

the pupils and students training in creative processes and raise their awareness regarding innovation and value creation.

2. Establishment of mini-companies

- Pupils' enterprise – lower secondary education
- Company programme – upper secondary education and training
- Graduate Programme – university colleges and universities

There is some progression in the entrepreneurial competence acquired by the pupils and students through these three mini-company programmes. The mini-company programmes are carried out in collaboration with local business and working life. All mini-companies have their own mentors from business life. Girls and Leadership, Enterprise without Borders and Inclusive Working Life are support programmes in which pupils in youth enterprises may participate. The KAN-programme (Norwegian abbreviation for women, ambitions and networks) is a support programme for those running student enterprises.

3. Working life and business development

The programmes deal with topics such as resources and opportunities, a basic understanding of value creation, jobs and career opportunities and decision-making processes. The programmes vary between 5 and 10 hours and have a coach from local business and working life who clarifies the topics. Our Community, Europe and Me, Economics for Success, Personal Economics are all examples of classroom-based programmes. More information can be found on: www.ue.no

« *Entrepreneurship is an exciting field that facilitates many different ways of working which can promote motivation for and interest in math, science and technology.* »

Work on entrepreneurship is embedded in the *National Curriculum for Knowledge Promotion in Primary and Secondary Education and Training*. The Ministry of Education and Research wishes to highlight especially that entrepreneurship in vocational education and training can be a very good means of increasing motivation and improving the pupils' completion rates, as it demonstrates dif-

ferent career opportunities and is relevant for an active working life in the future. Entrepreneurship in vocational education and training has not yet received the same priority as other parts of upper secondary education. The Ministry of Education and Research will therefore make efforts within vocational education and training a greater priority.

Junior Achievement - Young Enterprise Norway (JA-YE Norway, in Norwegian *Ungt Entreprenørskap*) is an organisation that is dedicated to entrepreneurship in education and training, see Box 6. JA-YE Norway submits reports about its various activities, which cover all educational levels, cf. figure 1.

Figure 1 shows that there has been a great increase in the number of pupils and schools taking part in JA-YE Norway's programmes since the or-

ganisation was established in 1997. Pupils' and students' enterprises are the most common programmes, with a total of 22,000 participating pupils in 2008/2009.

JA-YE Norway develops courses and prepares programme plans. The programme plan for 2010 – 2014 has been presented.

The Ministry of Education and Research, the Ministry of Trade and Industry and the Ministry of Local and Regional Affairs find it promising that girls dominate the positions as general managers and in the boards in JA-YE Norway's Company Programme. Over the next four-year period JA-YE Norway will collect experiences from the programme Girls and Leadership with a view to making it a nationwide scheme.

In May 2009 *the National Centre for Innovation and Entrepreneurship* (KPB, Kunnskapsparken Bodø AS) organised the conference called INOVUS. In this connection they organised a competition in which the schools were invited to submit a description of the courses they provided in entrepreneurship. The 31 submitted entries show a diversity of the ways in which entrepreneurship can be integrated in the teaching. Table 2 provides a short description of three of the contributions.

Based on reports, examples and comments to the Action Plan, the Ministry of Education wishes to develop further work on entrepreneurship in primary and secondary education and training. In this work the Ministry of Education and Research will in the time to come place emphasis on access to teaching aids, good examples as to contents and working methods, and competence enhancement for teachers.

The Government believes it is especially important to strengthen recruitment to Mathematics, Science and Technology (MST). Entrepreneurship is an exciting field that facilitates many different ways of working that can promote motivation for and interest in MST.

It is also necessary to have better documentation of the effects of entrepreneurship in primary and secondary education and training.

2.5 Vocational College Education

The vocational technical colleges are required to offer vocational education and training, so entrepreneurship competence is relevant both as a discipline in its own right and as a topic integrated in other subjects. A programme of study in "Establishment, Innovation and Entrepreneurship" has al-

ready been approved. Most of those taking master certificates vocational technical college. They will be well equipped for starting their own enterprise or becoming managers of existing companies.

On 1 January 2010 the county authorities are assuming responsibility for running and funding the vocational technical colleges. So from now on it will be up to the county authorities to make entrepreneurship a priority in the education offered at the vocational technical colleges in line with national, regional and local needs for competence.

2.6 Collaboration between Education and Working Life

Contact between education and training and working and business life is important during entrepreneurship education, and the Government wishes to stimulate such contact. People who are entrepreneurs themselves or for other reasons have a thorough knowledge of entrepreneurship in practice should be involved as educational resources to a much greater degree. There has for instance for a long time been a scheme for positions as Adjunct Professor in higher education, and in White Paper no. 44 (2008–2009) *Education Strategy* the Government opens up for similar adjunct teaching positions in upper secondary education. This has already been tried out as part of the follow-up to the Government's *Strategy for environmentally friendly growth in the maritime trades*. In 2008 and 2009 funds have been allocated to facilitate more posts for adjunct professors and other adjunct teaching positions in maritime education.

The organisation JA-YE Norway has entered into collaboration agreements with parties from business life and with several of the organisations of business life, including NHO (the Confederation of Norwegian Enterprise) and HSH (the Federation of Norwegian Commercial and Service Enterprises). This collaboration has among other things led to several enterprises and public institutions providing their employees with an opportunity to use their working hours to act as mentors for pupils taking an education in entrepreneurship. Universities and university colleges are also collaborating actively with business life both regionally and nationally to develop programmes of study and commercialisation activities. The Government has a number of programmes designed to stimulate local and regional collaboration projects between education and business life, such as Norwegian

SCHOOL	PROJECT
Alnes School, Giske municipality in Møre & Romsdal County.	Years 1 to 4 in the school took the programme MiniREAL as its starting point. The pupils were given an introduction to the structure of the municipality and the local community. Then the pupils constructed models of their own local environment, and after a vote decided that everyone had to move to the community "Rekeby". Here in Rekeby jobs were created, advertised and filled. Finances had to be organised, and so the currency "Rekekroner" was established. The pupils had meetings with the bank, and the mayor gave all the inhabitants 100 rekekroner on condition that they took up residence and contributed to the community. The development of enterprises, purchases and finances gradually became massive challenges. Goods and services were produced and finally exhibited on the big Market Day.
Gloppen Lower Secondary School, Gloppen municipality in Sogn & Fjordane County.	In the subject called Nature, Culture and Media Pupils' Enterprises, the school collaborates closely with business life and public actors in the region on a number of projects. These projects are for instance developing the contents of GeoAtlas, writing articles for the local newspaper and counting birds for the County Governor.
Tiller Upper Secondary School, Trondheim municipality, Sør-Trøndelag County.	The school is taking part in a two-year project called "From Words to Action", where the objective is to increase the completion percentage and learning outcomes by increasing the pupils' motivation and mastery by using of entrepreneurship as a cross-disciplinary strategy. The pupils are to have greater opportunities of working with realistic, practical issues in a social context. There is close collaboration with business life through for instance mentor enterprises. The school is also prioritising systematic training of teachers and collaborates with external competence communities on professional coaching and courses, as well as for analyses and documentation of effects.

Table 2: Examples of projects in entrepreneurship in primary and secondary education and training

Centres of expertise (NCE)¹⁷, Programme for Regional R&D and Innovation (VRI)¹⁸, User-driven Research Based Innovation (BIA)¹⁹ and PhDs in business.

« People who are entrepreneurs themselves or for other reasons have thorough knowledge of entrepreneurship in practice should be involved as educational resources to a much greater degree

In White Paper no. 44 (2008–2009) Education Strategy, the Government proposes several measures designed to contribute to a more structured and binding collaboration between education and working and business life, for instance by creating greater opportunities for mobility across the sectors for both students and teachers. A major measure is the establishment of the Council for Colla-

boration between State Universities and Colleges and Business Life (RSA) and the development of strategies for collaboration.

2.7 Innovation and Regional Development

International research shows that new enterprises are responsible for an ever-growing proportion of employment, innovation and wealth creation. The Government wants pupils and students to be able to learn about entrepreneurship wherever they live or study. In White Paper no. 25 (2008–2009) *Local Growth and Belief in the Future*, work on entrepreneurship is divided into four main areas: Culture for entrepreneurship, guidance and enhanced competence, financial schemes for enterprises in early development phases and infrastructure, adaptation and networking. The Ministry of Local and Regional Affairs places special emphasis on stimulating entrepreneurship among young people and perceives entrepreneurship in education and training to be a major strategy to achieve this goal.

Greater focus on entrepreneurship is also a major part of the promotion of an entrepreneurship

¹⁷ www.innovasjon Norge.no

¹⁸ www.forskningsradet.no/vri

¹⁹ www.forskningsradet.no/bia

culture in *New Building Blocks in the North*, the next step in the Government's High North Strategy.

Today women are underrepresented as founders of enterprises and in leading positions in business life. This is also why the authorities are placing special focus on promoting the position of women in business life and as entrepreneurs. In 2008 the Government therefore presented *Action Plan for Increased Entrepreneurship among Women*, with the objective of having a female percentage of 40 per cent of all new entrepreneurs by 2013.

A report from Eastern Norway Research Institute²⁰ shows that entrepreneurship in education and training is important for achieving central objectives of regional policy. The report shows that:

- Lower secondary pupils who become involved in local community life through pupils' enterprises and practical experience, for instance, are more likely to wish to settle down in their home community than pupils who have not taken part in this kind of programme
- Upper secondary pupils who have taken part in entrepreneurship training are more likely to settle down in their home community
- Entrepreneurship in schools helps strengthen young people's knowledge of local requirements and opportunities, thereby also strengthening their attachment to their home community
- Teaching in entrepreneurship can demonstrate local role models
- If business life is given the opportunity to market itself in education, it may stimulate young people to choose an education that is needed in local business life

An evaluation of the previous *Strategy for Entrepreneurship in Education and Training* shows that there are regional differences in the percentage of pupils and teachers taking part in entrepreneurial activities. Activity in the counties of Nordland, Oppland, Oslo, Sogn og Fjordane, Telemark and Østfold are above average. The county authorities submit annual reports to the Ministry of Local and Regional Affairs on their use of resources for regional development. These reports show that the counties vary a good deal with respect to making entrepreneurship in education and training a priority and how the resources are used.

²⁰ ØF-rapport 10/2008 (Report 10/2008)

BOX 7: Entrepreneurship in Sogn og Fjordane County

Entrepreneurship and innovation are one of the main areas of priority for the county authorities in Sogn og Fjordane. Sogn og Fjordane University College and the county authorities are collaborating on the development of new programmes of study in entrepreneurship. Some examples of the University College's development projects are:

- The establishment of student enterprises in all the faculties
- The establishment of a new 3-year programme of study in "Crafts and Design with Emphasis on Entrepreneurship"
- Entrepreneurship in kindergartens – a development project in two kindergartens

Entrepreneurship has been included in teacher education as a cross-disciplinary subject. This applies to general teacher education, pre-school teacher education and the 1-year programme in educational theory and practice (PPU). The University College has also developed several other continuing education courses. All of the programmes of study use the REAL tool and experience-based learning. REAL is an American experience-based, pupil-active pedagogical tool in entrepreneurship which Sogn og Fjordane University College has translated and adapted to Norwegian conditions in its collaboration with schools and kindergartens. The University College has developed the material so that it is suitable for kindergartens, primary and lower secondary education, higher education and local communities. The material contains exercises/activities emphasising creativity and creative processes, group processes and communication, knowledge of the local community, economy, budgets and accounts and marketing/sales.

2.8 Instruments for Young Entrepreneurs

One major reason for making the teaching of entrepreneurship a priority is that it is considered a good thing if more people were able to establish their own enterprise or take active part in innovative and entrepreneurial processes in working and business life. It is important that students who wish to start a business in connection with their studies or on completion of their education are offered

comprehensive monitoring and guidance and good services.

« *It is considered a good thing if more people were able to establish their own enterprise or take active part in innovative and entrepreneurial processes in working and business life*

Establishing an enterprise is a long process from idea to establishment and growth in the market. The process often requires experience, network, capital and competence. For students with the potential to establish their own enterprises, there are a number of opportunities for help from public and other organisations. Surveys²¹ show that entrepreneurs in the idea and start-up phase have many places they can get help, for example run by JA-YE Norway, START Norway, local centres for entrepreneurs, SIVA, Innovation Norway's regional offices, municipalities and county authorities. Constructing first line services in the municipalities is one example of services available to entrepreneurs. Interaction between academia and the established business community is necessary to prepare students for life as an entrepreneur. Meeting places and arenas such as Connect in Norway²² are therefore important for connecting students and entrepreneurs to the established business community.

« *For students with the potential to establish their own enterprises, there are a number of opportunities for help from public and other organisations*

Innovation Norway has a comprehensive approach to entrepreneurship as a process and places special emphasis on developing services aimed at selected entrepreneurs and young enterprises with a potential for growth and profitability. Recently several new services have been introduced for the phases between establishment and market introduction/ growth.

21 For example Rambøll Management 2007: Evaluering av unge etablereres kompetansebehov (*Evaluation of the competence requirements of young entrepreneurs*)

22 <http://www.connectnorge.org/>

BOX 8: Emax Nordic

Emax Nordic is an entrepreneurship conference gathering 200 of the most prominent entrepreneurs between 18 and 25 from the Nordic countries. The objective is that young people who have shown a special interest for entrepreneurship in their education or in their leisure activities are offered inspiration, knowledge and networks in an international environment. The participants perceive themselves as future entrepreneurs, contributors to entrepreneurship processes or as future company managers.

At this conference it is the individual that is stimulated. The participants are given training in collaborating with others, building self-confidence and becoming acquainted with their own strengths and weaknesses. All the participants are hand-picked on the basis of applications and a personal interview.

Innovation Norway is partner in a Nordic collaboration with the Danish Ministry of Education and Selvstændighetsfonden in Denmark, the Finnish Ministry of Labour and Trade, the Swedish Agency for Economic and Regional Growth - Tillväxtverket (previously NUTEK) and the Nordic Council of Ministers, who are together responsible for the conference.

Examples of services from Innovation Norway:

- NewGrowth – grants for newly established enterprises with a growth potential. The scheme is limited to the area for regional policy
- Incubator grants and establishment grants for entrepreneurs with growth potential all over the country
- The high growth programme – tailor-made services for top and growth entrepreneurs in the shape of competence, networks and advice
- General priority for young people, with some special tools designed for younger entrepreneurs, such as Emax Nordic (see Box 8).

In 2007 Innovation Norway started three pilot projects to develop a mentor scheme/advice service for young entrepreneurs. The formative evaluation of these pilots shows that there is generally a strong need for individual guidance and supervision, and that this is especially useful in the growth phase.²³

23 Mentor pilots Innovation Norway 2008/2009, Final Evaluation, June 2009

SIVA²⁴ is a state-owned company that works to create strong wealth creation communities through the establishment and improvement of the national infrastructure for creativity and innovation. These include business gardens, incubators and knowledge parks.

- Business gardens offer companies an infrastructure and environments for development. Co-localisation of small businesses in a professional and social environment is meant to contribute to growth
- Incubators offer professional guidance, competence networks and a rent adapted to the enterprise's financial ability in a start-up phase. The incubators are located in the universities' research parks and the university colleges' knowledge parks. SIVA also has a distributed incubator solution which can give an equivalent service to entrepreneurs outside the established incubators.

²⁴ Selskapet for industrivekst SF. - *The Industrial Development Corporation of Norway*



3 Measures for Strengthening the Place of Entrepreneurship in Education and Training

The objective of the Action Plan is to *strengthen the quality of and the scope of entrepreneurship education and training at all levels and in all areas of the education system. Internationally Norway shall be a leading force when it comes to entrepreneurship in education and training.* To attain this objective, the Action Plan here proposes measures that aim to strengthen efforts concerning entrepreneurship in education and training.

Measure 1: Implement the qualifications framework for higher education

The Ministry of Education and Research established the qualifications framework for higher education in a letter of 20 March 2009 as a follow-up to the Bologna Process and the European Qualifications Framework. This provides the overarching guidelines for the students' total learning outcomes on completion of their education. The qualifications framework states that all degree programmes and courses at all levels are to enhance competence in innovation. By 2012 the universities and university colleges are to revise their programme descriptions in all degree programmes so as to show learning outcomes clearly, among other things with regard to innovation.

Measure 2: Establish places for entrepreneurship and innovation in higher education

The Revised National Budget for 2009 established 3 000 new full time student places and 800 places for continuing and further education. When allocating these places the Ministry of Education and Research has placed emphasis on entrepreneurship being a priority in order to increase the scope and breadth of education in entrepreneurship. The allocation of the 3 000 new places includes a requirement that the entrepreneurial perspective is incorporated in newly-established student places

and programmes of study wherever relevant. In the allocation of places for continuing and further education, it is a prerequisite that institutions offering education in entrepreneurship make further education in this field a priority.

Measure 3: Invite applications for funds for developing programmes of study in entrepreneurship and innovation at universities and university colleges

In order to stimulate the development of more programmes of study and new teaching methods in entrepreneurship and innovation, stimulation funds will be allocated in 2010 for developing programmes of study and courses at universities and university colleges. These funds will be seen in conjunction with the implementation of the qualifications framework. Emphasis will be placed on presenting good examples of how entrepreneurship can be integrated in different types of education, competence enhancement for academic staff, cross-disciplinary cooperation between the faculties and departments of an institution and collaboration between educational institutions and collaboration with business life. Emphasis will also be placed on sharing experiences from development work with other relevant parties.

Measure 4: Invite applications for funds for developing new programmes of study in intellectual property rights

Intellectual property rights are becoming an increasingly important part of an enterprise's equity with significance for its business strategies. Therefore, future entrepreneurs and employees must have more competence in this field. In 2009 the Ministry of Trade and Industry and the Ministry of Education and Research will together allocate ap

proximately NOK 2 mill. as one-off grants for universities and university colleges so they can start new programmes of study in this area or develop existing ones further. The measure is a follow-up to Report to the Storting (White Paper) no. 7 (2008–2009) *An Innovative and Sustainable Norway*. It also means more emphasis on meeting places in this field.

Measure 5: Invite applications for funds for continuing education in entrepreneurship for teachers

The *National Curriculum for Knowledge Promotion* contains expectations that pupils and apprentices have acquired competence linked to entrepreneurship. For this reason the Directorate of Education and Training has each year since 2006 had approximately NOK 2 mill to allocate for the purpose and has invited applications for funds from university colleges and universities with teacher education programmes that focus on:

- developing study courses where training in entrepreneurship is integrated in *the teacher education programme* with focus on pedagogical principles and appropriate tools
- offering continuing education courses, in-service training schemes, experience exchanges or other types of competence development for teachers and school leaders in *primary and secondary education and training*

The Ministry of Education and Research aims to continue this measure and wishes to encourage the institutions providing teacher education for vocational education and training to apply for such funds.

Measure 6: Follow up the evaluation of engineering education and revision of the National Curriculum for engineering subjects

The Ministry of Education and Research wants increased focus on entrepreneurship in sciences and technological subjects. In 2008 NOKUT evaluated two- and three-year engineering programmes in higher education. Their main conclusion was that on the whole the quality of the engineering education is good. However, the evaluation also points

out a number of challenges, such as the relevance of the education for working life, low recruitment and high drop-out figures. As a follow-up, the educational institutions have made local plans of action for their respective challenges.

The Ministry of Education and Research will follow up the evaluation at the national level, among other things by stronger focus on the challenges regarding recruitment. In addition the Ministry will initiate a revision of the National Curriculum for 2- and 3-year programmes for engineering education. This will both follow up feedback to the evaluation and adapt the National Curriculum to the qualifications framework, including the issue of how innovation can be integrated in new curricula.

Measure 7: Make entrepreneurship in the Business PhD scheme more visible

As part of the Government's focus on collaboration between education and working and business life there is currently a scheme for a Business PhD. This is a joint scheme between the Ministry of Trade and Industry and the Ministry of Education and Research. Via the Research Council of Norway the Ministries provide partial funding for ordinary doctoral degree programmes where a phd candidate is employed in an enterprise, and where the research question the candidate is addressing has an obvious relevance for the enterprise. Companies entering into an agreement on a Business PhD, receive an annual financial grant from the Research Council of Norway which amounts to the equivalent of 50 per cent of the going rate for doctoral grants for three years.

The Business PhD scheme is open for *all* types of doctoral degree programmes, also for candidates doing research in the field of entrepreneurship or researchers in newly-established enterprises. An enterprise could for instance employ a candidate so as to acquire more knowledge about entrepreneurial and innovative process in the firm, about how their work on developing ideas and spin-offs can be improved, and how entrepreneurship and innovation can help strengthen the enterprise's competitiveness.

In their allocation letter to the Research Council of Norway, the Ministry of Trade and Industry wishes to emphasise that the Business PhD scheme also applies to doctoral programmes related to entrepreneurship.

Measure 8: Review the report indicators for entrepreneurship and innovation from universities and university colleges

To achieve better reporting routines for entrepreneurship in higher education, it is necessary to review the report indicators for universities and university colleges so as to clarify the criteria and make entrepreneurial activities more visible. A uniform understanding of what can be reported as teaching of entrepreneurship in higher education is required. The Ministry of Education and Research will start work on this in the course of 2009.

Measure 9: Follow up the Knowledge Promotion Reform

In order to develop the quality and scope of training in entrepreneurship in primary and secondary education, follow-up to the Knowledge Promotion is to be developed further. There must be guidance on how to work with entrepreneurship in different subjects. The entrepreneurship pages on the educational website *Skolenettet.no* are to be further developed. The website for entrepreneurship will also comprise a “resource bank” with good examples of teaching plans for entrepreneurship. The Directorate for Education and Training is responsible for this follow-up.

Entrepreneurship is discussed in the chapters concerning adapted education and working methods in the *Handbook for Local Work on Subject Curricula*. Entrepreneurship will also be included in new guides to the subject curricula where it is relevant. The Directorate for Education and Training is responsible for the development and quality assurance of the guides for subject curricula which will be published on www.skolenettet.no. The subject curricula for mathematics and natural science, for instance, will show how entrepreneurship can be used in these two subjects. Entrepreneurship in education that includes science topics may give pupils increased motivation by creating better understanding and giving the MST subjects a more practical slant. It is also important that entrepreneurship emphasises the innovative and creative aspects of the MST-courses. The National Centre for Mathematics Education (the Mathematics Centre), the National Centre for Natural Science

Education (the Natural Science Centre) and the regional science centres will have central roles in the further realisation of the guides for the curricula for these subjects.

Measure 10: Establish a website for digital teaching aids for entrepreneurship in primary and secondary education and training

In order to increase the amount and accessibility of digital teaching aids in entrepreneurship, *Utdanning.no* will strive to cooperate with JA-YE Norway and other relevant parties on developing further the number of teaching aids for entrepreneurship in primary and secondary education and training. A website for teaching aids in entrepreneurship will be launched. This is meant to contribute to improved access to digital and paper-based teaching aids for training in entrepreneurship.

Measure 11: Continue to allocate funds to JA-YE Norway

In 2009 the Ministry of Education and Research, the Ministry of Local and Regional Affairs and the Ministry of Trade and Industry have provided the organisation JA-YE Norway with a grant totalling NOK 19.8 mill. By offering training in entrepreneurship to pupils and students at all levels of education, JA-YE Norway wishes to give children and young people an understanding of the significance of wealth creation and innovation in business life. This makes the organisation a major collaboration partner in the Government’s efforts for the promotion of entrepreneurship in education and training. The Ministries would like JA-YE Norway’s training programmes to continue to develop.

The Government wants all pupils to receive a good education wherever they live, with more Norwegian schools integrating entrepreneurship in their teaching. In line with the Soria Moria Declaration, the Government wishes to continue efforts to get more pupils to take part in pupil’s enterprises.

In upper secondary vocational education and training entrepreneurship may be a means of ensuring good learning outcomes and increased motivation. Through existing grants to JA-YE Norway, administered by the Directorate for Education

and Training, the Ministry of Education and Research will make entrepreneurship in vocational education programmes a priority.

In 2010, in connection with the Ministry of Local and Regional Affairs' High North measures, increased entrepreneurship will be stimulated, in line with the promotion of an entrepreneurship culture in *New Building Blocks in the North*, the next step in the Government's revised High North Strategy. The Ministry of Local and Regional Affairs will enter into a dialogue with JA-YE Norway to discuss *New Building Blocks in the North*.

JA-YE Norway works to strengthen interaction between business life and the educational institutions and has entered into a number of collaboration agreements with business partners and several of the organisations of business life. The Ministries now request JA-YE Norway to continue to develop their sterling work on promoting collaboration between the educational institutions and business life.

In connection with the follow-up to this Action Plan, the Ministries see that it is necessary to coordinate dialogue with JA-YE Norway. This conclusion has come about because of a considerable increase in the allocated grant since the first grant in 2002. Therefore the Ministries have established a coordination group consisting of the Ministry of Education and Research, the Ministry of Local and Regional Affairs and the Ministry of Trade and Industry. This coordination group will work out a joint text for the allocation letters, and together evaluate the reported information on which the allocation will be based. In the course of 2010 the coordination group will initiate an external evaluation of the grant given to JA-YE Norway, cf. Measure 12.

Measure 12: Strengthen research on and start evaluations concerning entrepreneurship in education and training

In order to acquire better knowledge about entrepreneurship in education and training, research projects, evaluations and reports are being planned:

- Various reports and feedback indicate that training in entrepreneurship gives pupils better self-confidence and increased motivation, and that this can contribute to increased learning outcomes. The Government aims to make education and training more realistic and practical, among other things in order to reduce drop-out

figures and to develop a more flexible and competent workforce. However, more documentation of the effects of training in entrepreneurship is necessary. In 2010 the Ministry of Education and Research will initiate a research project to consider such effects in primary and secondary education and indicate where it is necessary to increase efforts.

- JA-YE Norway has received funding from the Ministries since 2002. However, this has not been evaluated. The coordination group, consisting of the ministries responsible for the funds, will therefore in the course of 2010 initiate an external evaluation of the grant scheme. The terms of reference and organisation of the evaluation will be decided in 2010.
- The evaluation of the previous strategy See the Opportunities and Make them Work! points out that there are regional differences in the number of pupils and teachers that take part in entrepreneurial activities. The Ministry of Local and Regional Affairs will therefore carry out a review to acquire better information about the reasons for these variations. Calls for applications will be advertised in 2009.

In addition the issue of how the entrepreneurial perspective can be included in existing research programmes will be considered.

Measure 13: Organise conferences and contribute to the establishment of meeting places for entrepreneurship in education and training

In order to promote national and international experience sharing, the Ministries wish to contribute to the establishment of meeting places. Activities in the field of entrepreneurship have increased considerably over recent years. It is therefore important to achieve systematic learning between the various parties. The Ministries will consider different types of experience sharing, among other things with the help of the reference group that is to follow up the Action Plan and with conferences and meeting places that can contribute to professional and academic development in this field. In 2010 the Ministries will take an initiative to organise a conference on entrepreneurship in higher education.

In connection with the EU's efforts in entrepreneurship in education and training and Nordic work in this field, the Ministries will contribute

actively to sharing experiences with other countries and to showing international opportunities for Norwegian institutions.

Measure 14: Strengthening efforts for young entrepreneurs in Innovation Norway

In order to improve the transition from studies to the establishment of a business and making Innovation Norway more visible for young entrepreneurs, the Ministry of Local and Regional Affairs and the Ministry of Trade and Industry will contribute to the further development of efforts concerning young entrepreneurs in Innovation Norway. Giving training in entrepreneurship in education greater priority must be seen in connection with the opportunities young people have to establish their own enterprise on completion of their studies and how they are followed up in the establishment process.

The following measures will be given priority:

- The three mentor pilot projects Innovation Norway has carried out have been evaluated and are to be further developed. The Ministry of Local and Regional Affairs plans to expand the mentor scheme to help make it available all over the country.
- The Ministry of Local and Regional Affairs and Innovation Norway will, through their project "Young People in Focus", consider more accurate schemes designed for young potential entrepreneurs.
- In connection with the Ministry of Local and Regional Affairs' High North Strategy, funds will be allocated to young entrepreneurs in line with the promotion of an entrepreneurship culture in the North of Norway, as described in *New Building Blocks in the North*, the next step in the Government's revised High North Strategy.
- The Ministry of Trade and Industry and the Ministry of Local and Regional Affairs will ask Innovation Norway to consider how they can be more visible with the aid of information and guidance to the target group of young entrepreneurs.



4 Follow-Up

The Ministry of Education and Research has had the main responsibility for drawing up the Action Plan, in close collaboration with the Ministry of Local and Regional Affairs and the Ministry of Trade and Industry. The three Ministries behind the Action Plan will also collaborate on following it up. The Ministry of Education and Research will lead an inter-ministerial reference group that is responsible for the follow-up. A number of stakeholders have contributed ideas and views during work on the Action Plan. The Ministries and the reference group wish to have a close collaboration with the various parties when following up the Action Plan. Among other things the reference group plans to have regular meetings with relevant collaboration parties concerning work on entrepreneurship in education and training.

The Ministries will also collaborate on a formative evaluation of the Action Plan. This evaluation is among other things to contribute ideas during the follow-up to the Action Plan, both to the educational institutions and the Ministries, and to various arenas for experience sharing.

The Ministry of Education and Research, which is responsible for follow-up with regard to higher education, will include follow-up to the Action Plan in its ordinary administrative dialogue with the universities and university colleges.

The Action Plan will be subject for a final evaluation in 2014.

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