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2009 – EUROPEAN YEAR OF CREATIVITY AND INNOVATION

Exploration and Analysis of 'Creativity and Innovation in Initial Vocational Education and Training'

**based on experience gained from 7 EU Member
States
and 12 apprenticeship trades**

Report – Summary

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Commissioned by the Federal Ministry for Education, the Arts and Culture

Vienna, November 2009

Introduction

In August 2008 the Federal Ministry for Education, the Arts and Culture, in reference to the European Year of Creativity and Innovation promoted by the EU Commission for 2009, instructed lege_artis to explore and analyse the functions and significance of *creativity* and *innovation* for the curricula of different forms of initial vocational education and training throughout the EU and to describe their effects.

Exploratory measures were to achieve the following **objectives**:

- to assess the importance of *creativity* and *innovation* for current systems of initial vocational education and training based on the knowledge gained from *12 apprenticeship trades* in *7 EU Member States*;
- to draft *theoretical fundamentals* to promote creativity and innovation potentials in connection with "key qualifications" in initial vocational education and training processes;
- to collect and depict examples of *Good Practice* demonstrating the effects for creativity and innovation;
- to prepare *recommendations* during an experts' conference.

The summary of the full report includes the **items** set out below:

- description and definition of the terms creativity and innovation relevant to our work – page 5 et seq,
- characterization of the systems of initial vocational education – IVET in the 7 EU Member States we investigated – page 7 et seq.),
- presentation and analysis of the documents constituting the foundation for education and training in the 12 apprenticeship trades we selected as examples – page 9 et seq.),
- selection of Good Practices at EU and national level with respect to the central issue of exploration – page 16 et seq., as well as
- a conclusion containing recommendations on how to better identify, promote and utilize the creativity and innovation potentials in Austrian apprenticeship training to the benefit of all concerned – page 25 et seq.

The full version of the report is available as a pdf file upon request from the Federal Ministry for Education, the Arts and Culture (erna.haas@bmukk.gv.at).

Walter Stach / Gabriele Stöger

1. Starting Position and Intentions of the Exploratory Measures

Starting Position

The **Lisbon Process**, a strategic programme agreed upon by European heads of states and governments in March 2000 in an effort to make the EU the most competitive and dynamic economic area worldwide within 10 years, i.e. by 2010, already sets great store by *creativity* and the ability for *innovation*, considering them the driving force for achieving sustainable economic, social and ecological development in Europe as targeted.

By the same token the *European Reference Framework* of December 2006 on the ***eight key competences for lifelong learning***¹, a recommendation of the European Parliament and of the Council within the "education and training 2010" work programme which is part of the *Lisbon Strategy*, also bears witness to *creativity and innovation*, reiterating as it does the role of critical thinking, creativity, problem solving, risk assessment, decision-making and constructive handling of emotions.

The text of the Council of Europe of 22 May 2008² written in preparation of **the European Year on Creativity and Innovation in 2009** restates the importance of both factors: *creativity is the prime source of innovation, which in turn is acknowledged as the main driver of growth and wealth creation, as key to improvements in the social field and as an essential tool in addressing global challenges such as climate change, health care and sustainable development.*

Finally, the press release of 31 March 2008 states: *Creativity and the ability for innovation are to become key competences for all citizens in Europe. That is why the Commission has today adopted a proposal to declare 2009 the European Year of Creativity and Innovation. The decision will be taken later this year by the Council and the European Parliament.*

Ján Figel', Commissioner responsible for education, training, culture and youth, believes the Year is "an effective way of helping to meet challenges by raising public awareness, disseminating information about good practices, stimulating education and research, creativity and innovation, and promoting policy debate and change."

¹ 1. communication in the mother tongue, 2. communication in foreign languages, 3. mathematical competence and basic competences in science and technology, 4. digital competence, 5. learning to learn, 6. social and civic competences, 7. sense of initiative and entrepreneurship, 8. cultural awareness and expression. – Recommendation of the European Parliament and of the Council of 18 December 2006 on key competences for lifelong learning [Official Journal L 394 of 30 December 2006]

² Council Conclusions on promoting creativity and innovation through education and training 2868th EDUCATION, YOUTH AND CULTURE Council meeting, Brussels, 22 May 2008

The activities of the Year should focus on creating an environment favourable to creativity and innovation and become a strong impetus for a long-term policy priority. ... Highlighting creativity through such skills should foster problem-solving and the practical application of knowledge and ideas. All forms of innovation including social and entrepreneurial innovation should be taken into account.³

The objective of the European Year of Creativity and Innovation 2009 will be to promote creativity through life-long learning, as a driver for innovation and as a key factor for the development of personal, entrepreneurial and social competences and the well being of all individuals in the society.⁴

Intentions

On a long-term average **40% of 15 to 19 year olds in Austria are apprentices** which means they receive their initial vocational education and training in a dual system of (vocational) schools and company-based training on the job.

This type of training is ultimately directed at **usefulness**: *apprentices are trained to one day become functioning economic drivers for society in their capacity as skilled workers. Thus, their social obligation to all intents and purposes is a central one. Yet there is very little mention of them in public. Apprentices become items for the media only where there is cause for complaint or alarm: there are too many or too few to meet the needs of the "economy"; their level of education is disastrous; they are alarmingly susceptible to right wing radicalism. General "school relevant" problems and reform ideas are first made out in all but vocational schools. ... Training on the job is still much of a taboo area for outsiders.⁵*

- On the one hand we identified objectives for the current study based on **long-term personal experience and knowledge**: working in cultural mediation projects with apprentices in Austria, developed systematically since 1989, we found that these young people easily express the same potential for creativity and innovation as others in the same age group; consequently it is worthwhile for everyone concerned, be they apprentices, schools or companies, to recognize, claim and promote such potential.⁶
- On the other hand we felt that the EU topic for the year 2009 was an opportunity for us to investigate **beyond the borders of Austria** to appreciate if and to what extent *creativity* and *innovation* are considered interdisciplinary

³ <http://europa.eu/rapid/press>

⁴ Press release, 2868th Council meeting. Education, Youth and Culture. Brussels, 21 –22 May 2008

⁵ DAS NÜTZLICHE UND DAS FREMDE: Lehrlingsausbildung – Kulturvermittlung – Kulturelle Bildung. Herausgegeben vom Bundesministerium für Unterricht und kulturelle Angelegenheiten, Büro für Kulturvermittlung, Team EigenArt/Museum. Wien 1995³

⁶ Wolfgang Gasser / Institut für Erziehungswissenschaft und Bildungsforschung der Universität Klagenfurt: Effekte der Kulturvermittlungsarbeit mit Lehrlingen im Rahmen der Projektreihe DAS NÜTZLICHE UND DAS FREMDE.; i. A. des Büro für Kulturvermittlung. Klagenfurt 1998

competences in initial vocational education and training in different European countries, both in theory, as provided for in regulations (curricula, education and training regulations, etc.), and in practice, i.e. in formal and informal learning situations.

- Finally, we wanted to provide a set of specific and substantial **proposals and recommendations** drawn from the survey and from the results of an experts conference, which might serve as a stimulus for education policy reforms of the dual system.

2. Creativity and Innovation – Defining the Terms

We did not come across a set of explicit definitions of the terms “creativity” and “innovation” in any of the documents on the EU year 2009 we examined. Thus, to embark upon our exploratory activities we had to create our own, relevant definitions.

Creativity

We analysed historical and current research material and came up with the following **manageable characteristics** of creativity as a basis for our work:

Creativity as we see it refers to the development of ideas to transform and restructure established and ingrained practices and products, carried by an impulse to find more satisfactory solutions than those which already exist.

Emphasizing routine actions is a hindrance to creativity.

Creativity in substance encompasses all scopes of action:

- design and utilisation of products and services,
- distribution and marketing thereof,
- working processes and manufacturing techniques,
- cooperative relations and organisation,
- working conditions and social climate at work.

Creativity is characterized by the following

- a (self) critical eye for problems and weak points in traditional practices and products;
- breaking down fields of activities into simpler elements, using the latter to activate stored experiences considering additional aspects hitherto not taken into account;
- linking the results of the analysis with new solution drafts and verifying these in practice.

Creativity is made visible only upon searching for specific solutions.

The “best solution” in each case is selected in accordance with the standard of values applied.

The “qualification barometer” published by the Austrian Employment Services (AMS) for all occupations defines “creativity” as an “interdisciplinary qualification”, i.e. the capacity to think and act in associative, imaginative and

constructive ways.⁷ "Creative talent", the "ability to shape", "formative abilities", "artistic creativity", "imagination" and "technical creativity" are used as synonyms for creativity, amongst others.

It is already clear at this point:

Creativity is a skill developed under specific favourable conditions and therefore not attributable to a group of artistically active people only,

a fact made obvious by the efforts to establish a European Qualification Framework and which we consider of vital significance for the subject matter.

Innovation

Innovations as we understand them are proposals for solutions arrived at through creativity processes and capable of changing, complementing or replacing traditional practices and products.

The novelty of proposals for solutions is expressed as relative to the different reference groups: a novelty in respect of the practice of a single person, a working group, a company, a branch, a market, etc.

We also distinguish between innovations which have been realised and those which have not.

Used in the context of creativity the term innovation states whether or not the creation of ideas has generated practicable results.

According to the motto of the EU year 2009 it is the above general factors of "creativity" and "innovation", which we looked for in the different training directives for selected apprenticeship trades (training programmes, curricula) and in the actual training processes (incentives and opportunities for creative and innovative behaviour).

We took great care not to focus on "creative occupations" or "cultural education" in our survey, because creative behaviour in many instances is not triggered by artistic processes alone although the latter no doubt offer great potential for such behaviour.

⁷ see <http://bis.ams.or.at/qualibarometer/qualifikation.php?id=51>

3. Systems of initial vocational education and training in 7 EU-Member States

Basis for selection⁸

It is commonly believed that Austria is the only country with a dual education and training system of its kind. In actual fact, however, most EU countries have established some form of initial vocational education and training which involves both "training on the job" (company-based training) and "training off the job" (i.e. training in school). These forms vary considerably, yet only the Czech Republic, the Slovak Republic, Latvia and Lithuania have explicitly stated *not* to have a dual education and training system.

All other countries provide forms of education and training which are either accessible for all youth intending to receive initial vocational training upon completion of compulsory education, or which address specific target groups only (unemployed, dropouts, youth intending to learn a traditional trade, etc.):

- apart from the dual system as practiced in Austria, the South Tyrol, Germany, Denmark (and Switzerland) there are
- other systems where apprentices receive both training off the job and training on the job,
- during which they spend 75-80% of their time on the job (AT, BE, GE, DK, EE, FI, FR, SI, MT and UK), the remainder in courses, colleges, vocational schools or evening classes or acquire theoretical knowledge through e-colleges.
- In other countries they spend 30-50% on the job (PT, SE, HU, IE, NL) and in other cases
- there is basic education and training at school followed by training off the job and on the job (EL, LU, IC) or
- there is education and training at school complemented by practical training on the job (RO, PT) or
- training on the job complemented by practical and/or theoretical courses in school workshops (IT) especially
- where companies do not dispose of the necessary prerequisites to properly train apprentices (PL).
- In some countries apprenticeships constitute a special form of training for a small group of young people only (unemployment only) or for a few occupations only (CY, BG).

Minimum age at entry into vocational training is between 15-16 years on average, the maximum age is 22 years (training operations in Estonia for unemployed people). Admission in most cases presupposes completion of compulsory or primary schooling.

It is worth noting in the context that in the 27 EU Member States, according to Eurostat 2006, 22.2 million young people completed vocational education and

⁸ Quelle: Eurybase. The Information Database on Education Systems in Europe, http://eacea.ec.europa.eu/education/eurydice/index_en.php

training at ISCED Level 3, which is 52% compared to 48% in general secondary education.

Justification for the choice of countries

Following an overview of initial vocational education and training in EU practice, 7 Member States were given closer scrutiny:

- Denmark (DK)
- Netherlands (NL)
- Austria (AT)
- Poland (PL)
- Portugal (PT)
- Hungary (HU)
- United Kingdom (UK)

The 7 countries were selected with the following criteria in mind:

- the initial vocational education and training investigated in the country was to correspond to Level ISCED 3 and preferably was to be provided both in school (off the job) and on the job.
- the countries selected were to represent a wide range of *different* vocational education and training systems rather than provide comparability on the basis of similarity.
- a representative number of youth in the country was to complete this form of education and training.
- selection was to produce a balanced geographic spread within the European Union.
- selection was to include a mix of *old* and *new* EU Member States (with traditional and completely new structures of initial vocational education and training).

The 7 countries selected were not to be compared with each other, but were to dispose of aspects which may be relevant to creative and innovative action, i.e. conducive or a hindrance to such action:

- Denmark – a dual education and training system similar to the Austrian one, special emphasis on entrepreneurship, production schools
- Netherlands – modular system, occupational fields, emphasis on interdisciplinary competences
- Austria – starting point for the survey, “classical” dual system undergoing step-by-step reforms, specific Good Practices

- Poland – new Member State, system of technical schools, relatively recent education and training regulations
- Portugal – southern Member State, apprenticeship plays a subordinate role (mostly for traditional occupations, handicrafts)
- Hungary – recently completed comprehensive vocational school reform
- United Kingdom – long-standing system of National Occupational Standards (NOS), very complex and heavily regulated

4. "Creativity" and "Innovation" in the Regulations for 12 Apprenticeship Trades

Grounds for Selection

In Austria there are currently approximately 260 apprenticeship trades, in Hungary there are 190, in Poland 100, in Denmark also 100 and approximately 60 in the UK. It would not have been possible to examine all of them with the resources available.

To investigate creativity and innovation in initial vocational education and training (IVET) we first of all made a practical choice of representative occupations with the help of a set of multidimensional criteria, limiting ourselves to a number and workload which we could handle. The selected apprenticeship trades were to meet the following criteria:

- to exist in all the countries we selected for our survey,
- to represent the main economic sectors (primary sector: extraction of raw materials – secondary sector: raw materials processing /industrial production – tertiary sector: services),
- to represent the main branches of industry (production of goods for industry and crafts, distribution of goods and services – trade, transport, administration),
- to be representative of the number of enterprises and employees (gainfully employed) in the different occupations/branches,
- to be representative of the number of trainees (apprentices) also with respect to the percentage of male and female apprentices,
- to take into account the relation between trainees and objects (materials and tools oriented) or between trainees and people (communications/customer oriented), depending on their occupation,
- to take into account the economic significance of occupations for the present time as well as for a forecasted future of Europe (traditional – future oriented).

With these considerations and criteria in mind we then selected the following apprenticeship trades for our survey:

- Market garden expert
- Plastics technology expert
- Painting, Coating, and Decorating Worker
- Travel agency assistant
- Electrical engineering/installations technician
- Motor vehicle driver

- Motor vehicle engineering
- Cook
- Masseur
- Office/industry assistant
- Information technology expert
- Reprocessing and recycling expert

Method of investigation

Taking into account the above criteria for selection we analysed education and training regulations for 12 apprenticeship trades in 6 countries with regard to contents.⁹ (note: we had planned for 7 countries, but Portugal despite many efforts did not provide any relevant documents). Our contacts in the respective countries provided us with the necessary regulations. For occupations which had no corresponding apprenticeship trades in other countries we chose those which came closest to the Austrian occupational profiles.

In our text analyses we looked for the following elements:

- formulations explicitly containing the **terms creativity and innovation**, i.e. terms such as "creativity", "innovation", "creative", "innovative" and their equivalents in the languages of selected countries, as well as for related terms such as "contributing/contribution/to ...", "designing/design of ...", "independence/self-responsibility, initiative, ... independent, responsible work ...", "problem solving competence" etc.
- formulations which in general terms suggest **scope for creativity** and responsible action with respect to technical and interdisciplinary skills. This also includes (self) reflexivity, reflection of one's own position in the working process, one's relations with others, one's own career development (further education and training, career changes),
- formulations which generally refer to the eight **key competences** the EU decided to support, especially competences 5, 6, 7 and 8 (learning to learn, social and civic competences, sense of initiative and entrepreneurship, cultural awareness and expression – see p. 3),
- and finally formulations containing references to training of "**entrepreneurship competences**", i.e. competences which prepare individuals for managing companies on their own.¹⁰

⁹ To perform analyses by content we had occupational profiles, laws and (framework) regulations for apprenticeship training for different occupations in the six countries at our disposal (for documents in their original language see annex). The analyses for Austria and the United Kingdom were done on the basis of original documents, in the case of Poland, Hungary, Denmark and the Netherlands we asked translators to look for the above formulations in the documents and translate the relevant sections.

¹⁰ "Competence" in the context refers to cognitive, emotional, physical, etc. skills with respect to specific requirements. Competences are essentially characterized as being recognizable in specific

Results of the Text Analysis

We drew up the following tables as **summaries** for each country:

Denmark						
Occupation	Creativity /creative	Innovation /innovative	Scope for creativity		Key competences	Entrepreneurship
			technical	interdisciplinary		
Market garden expert	x	o	(x)	x	x	xx
Plastics technology expert	No apprenticeship trade					
Painting, coating and decorating worker	xx	xx	x	x	xx	x
Travel agency assistant	xx	xx	(x)	x	xx	x
Electrical engineering technician	xx	xx	x	(x)	xx	(x)
Motor vehicle driver	x	o	o	x	x	x
Motor vehicle engineering	o	x	(x)	o	x	(x)
Cook	x	x	o	x	x	x
Masseur	o	x	x	x	x	x
Office/industry assistant	xx	xx	o	x	x	x
IT expert	x	x	o	x	x	x
Reprocessing and recycling expert	No corresponding apprenticeship trade					

x = is mentioned, xx= plays a significant role, (x) = is mentioned but plays a minor role only
o = no mention, ID = interdisciplinary requirements

In **Denmark** both *creativity* and *innovation* are considered important for 4 of the 12 selected occupations (painting, coating and decorating worker; travel agency assistant; electrical engineering technician and office/industry assistant). At least one of the two terms we looked for is mentioned in all occupations. Reference is made several times to individual scope for creativity, either in a technical and an interdisciplinary context or both, as in most cases. *Key qualifications* are frequently mentioned and development of *entrepreneurship* is of major concern not only in vocational education and training in Denmark.

situations, they can be assessed, changed beyond the simple exercise of stereotype skills depending on context and reference, they contain aspects of subjectivity and can be repeated as the need arises.

Netherlands						
Occupation	Creativity/ creative	Innovation/ innovative	Scope for creativity technical interdisciplinary		Key competences	Entrepre- neurship
Market garden expert	x (ID)	o	(x)	x	x	x (ID)
Plastics technology expert	x	x	o	x	X	x (ID)
Painting, coating and decorating worker	x	o	o	x	X	x (ID)
Travel agency assistant	x (ID)	x (ID)	x	x	X	x (ID)
Electrical engineering technician	o	o	o	x	x	o
Motor vehicle driver	x (ID)	x (ID)	(x)	(x)	X	o
Motor vehicle engineering	o	o	o	(x)	X	x (ID)
Cook	x (ID)	x (ID)	x	x	X	x
Masseur	x (ID)	x (ID)	x	x	X	x (ID)
Office/industry assistant	x (ID)	x (ID)	o	x	x	x (ID)
IT expert	x	x	x	x	X	o
Reprocessing and recycling expert	No corresponding apprenticeship trade					

In the **Dutch documents** reference to *creativity* and *innovation* is found in the interdisciplinary competence requirements. It is worth noting that neither of the terms is mentioned with regard to motor vehicle engineering or electrical engineering technician. Scope for creativity in the technical context is called for with 6 out of 11 occupations, *key competences* are important for all occupations, *entrepreneurship* is mentioned in the interdisciplinary regulations for 7 occupations, and is actually part of the vocational training curriculum for cooks.

Austria						
Occupation	Creativity/ creative	Innovation/ innovative	Scope for creativity technical interdisciplinary		Key competences	Entrepre- neurship
Market garden expert	o	o	x	x	x	o
Plastics technology expert	o	o	x	x	x	o

Painting, coating and decorating worker	o	o	(x)	o	o	o
Travel agency assistant	o	o	(x)	x	x	(x)
Electrical engineering technician	o	o	o	x	x	o
Motor vehicle driver	o	o	(x)	o	x	o
Motor vehicle engineering	o	o	x	x	x	o
Cook	o	o	x	o	o	o
Masseur	o	o	x	o	o	o
Office/industry assistant	o	o	o	x	x	o
IT expert	o	o	x	x	x	(x)
Reprocessing and recycling expert	o	o	o	x	o	(x)

The search for the terms *creativity* and *innovation* in **Austria** proved somewhat disappointing which may be due to a large extent to the age of vocational education and training regulations (some of which date back to as long ago as the 1970ies). All regulations adopted after the year 2000 include a section on "personality development" which makes reference to *key competences*. There is scope for individual creativity both in the technical and the interdisciplinary sense in all occupations, *entrepreneurship* has only played a marginal role in initial vocational education and training to date.

Poland						
Occupation	Creativity/creative	Innovation/innovative	Scope for creativity technical interdisciplinary		Key competences	Entrepreneurship
Market garden expert	x	o	(x)	x	x	xx
Plastics technology expert	x	o	o	x	x	x
Painting, coating and decorating worker	o	o	x	x	x	x
Travel agency assistant	o	o	x	x	x	x

Electrical engineering technician	x	o	x	o	x	x
Motor vehicle driver	o	o	(x)	o	x	o
Motor vehicle engineering	o	o	o	x	x	x
Masseur	o	o	x	x	x	x
Office/industry assistant	o	o	x	o	x	o
IT expert	o	xx	x	x	x	o
Reprocessing and recycling expert	xx	x	x	x	x	(x)
Masseur	o	o	x	(x)	x	(x)

Remarkably, the term *creativity* in the **Polish regulations** is mentioned only with 4 occupations – market garden expert, plastics technology expert, electrical engineering technician, IT expert, *innovation* is mentioned only in the context of office/industry assistant, *entrepreneurship* on the other hand seems very important for most: occupational profiles for all but three occupations make reference to starting up or managing one's own company.

Hungary						
Occupation	Creativity/creative	Innovation/innovative	Scope for creativity technical interdisciplinary		Key competences	Entrepreneurship
Market garden expert	o	o	o	x	x	x
Plastics technology expert	o	o	x	o	x	o
Painting, coating and decorating worker	x	o	x	x	x	o
Travel agency assistant	x	o	x	x	x	o
Electrical engineering technician	o	o	x	o	x	o
Motor vehicle driver	o	o	(x)	o	x	o
Motor vehicle engineering	o	o	o	x	x	x
Cook	x	x	x	x	x	x
Masseur	x	o	o	x	x	o

Office/industry assistant	o	o	x	x	x	o
IT expert	x	o	x	x	x	x
Reprocessing and recycling expert	o	o	x	(x)	x	o

The new **Hungarian** vocational education and training regulations mention *creativity* in the context of several occupations such as painting, coating and decorating worker, travel agency assistant, cook, masseur and IT expert, *innovation* is referred to only in connection with cook. Scope for individual creativity and *key competences*, however, are found with all occupations. Entrepreneurship, i.e. learning to manage one's own company is currently considered for four occupations only: market garden expert, motor vehicle engineering, cook and IT expert.

United Kingdom						
Occupation	Creativity/creative	Innovation/innovative	Scope for creativity technical interdisciplinary		Key competences	Entrepreneurship
Market garden expert	xx	xx	x	o	x	o
Plastics technology expert	o	o	x	o	x	o
Painting, coating and decorating worker	o	o	x	x	x	o
Travel agency assistant	o	o	x	(x)	x	o
Electrical engineering technician	o	o	x	x	x	o
Motor vehicle driver	o	o	(x)	o	x	(x)
Motor vehicle engineering	o	o	o	x	x	o
Cook	o	o	x	o	x	o
Masseur	o	o	x	o	x	x
Office/industry assistant	o	x	(x)	x	x	x (Level 4)
IT expert	x	x	x	x	x	(x)
Reprocessing and recycling expert	o	o	o	o	x	(x)

In the **United Kingdom** National Occupational Standards (NOS) place significant emphasis on vocational competences, the terms *creativity* and *innovation* are mentioned only in the context of market garden expert, IT expert, as well as office/industry assistant. *Key competences* are addressed by the NOS, *entrepreneurship* is considered only at higher management levels.

5. Good Practice Examples

- Our search for examples of “creativity” and “innovation” implemented in initial vocational education and training was conducted on the one hand with the intention to identify existing regulations (curricula, training regulations) and examine them for relevant contents.
- On the other hand we wanted to find out if and how apprentices’ potential for creativity and innovation is being considered in the formal context of training, as well as in the informal environment outside school or company, whether it is expected and encouraged in practice, i.e. whether there are good practices with respect to new methods, concepts, models, projects, learning environments, etc.¹¹
- Activities during the European Year of Creativity and Innovation were to focus on creating an environment conducive to innovation and creativity and providing strong incentives for sustainable political commitment EU wide. All types of innovation, including social, cultural and entrepreneurial innovation were to be taken into account: information and awareness-raising campaigns were to be launched, Good Practices disseminated, discussions, meetings and conferences organized and a diversity of different projects were to be encouraged at regional, national and European level. We prepared our methods in line with the European Year and asked all EU Member States for specific references on the issue.
- Finally we also took into account innovations which due to political and systemic measures have been included in the sector of initial vocational education and training.

The examples made available to us in the course are described in the full report on our exploration.

Approach

To find out which activities EU Member States are setting to promote creativity and innovation in initial vocational education and training, especially in the context of the “European Year of Creativity and Innovation”, we wrote e-mails to all representatives of ReferNet¹² (representatives in 25 EU Member States – all with the exception of Rumania and Bulgaria – plus Iceland and Norway), asking them to provide us with information on the following:

¹¹ Bearing in mind the limited scope of this survey we were unable to provide “full coverage” on this. The data made available to us may still be considered exemplary for the different aspects of our investigation.

¹² The European Network of Reference and Expertise (ReferNet) was created by Cedefop (European Centre for the Development of Vocational Training) to meet the growing demand for information enabling comparison of the developments and policies in EU Member States.

- *Are there any special activities on Creativity and Innovation going on in the course of the European Year 2009 in your country?*
- *Do you know of relevant examples of good practice of informal or non-formal learning activities to promote Creativity and Innovation in your country's IVET system (apprenticeship training).?*
- *How can Creativity and Innovation be promoted in IVET according to your experience and knowledge of the current practice in your country?*

The same e-mail was also sent to the following institutions: Tempus (HU), Ministry for Education (DK), Ofsted (UK), Cedefop (EU).

21 of the 31 authorities or offices we wrote to provided us with fairly substantial direct answers or references to other competent authorities and documents, 5 have not answered at all, despite repeated reminders.

To complement our research outside Austria we also visited institutions and held interviews in Denmark, Hungary and the United Kingdom.

Searching for examples of "Good Practice", and in fact throughout the entire exploration, we realized how distinct the answers to our inquiries were from another with regard to content, quality and scale of the material.

Thus, in our research we came across detailed descriptions of fairly diversified project offers available to apprentices for expressing their creative and innovative potential during the school part of their training. We noticed however that for the company-based part of training there were practically no formalised options aside from companies' own initiatives, and we discovered that fundamental reformation of a training system as such may also be considered innovation.

Below we have organized all the material by topics, summarizing it to extrapolate the framework conditions and measures conducive to creativity and innovation:

Framework Conditions, Concepts, Models and Practical Measures at European Level and in the Member States

2009 – The EU Year of Creativity and Innovation

The declaration of the Council of Europe of 22 May 2008¹³ written in preparation of the European Year on Creativity and Innovation restates the importance of both factors at all levels of education.

The activities of the European Year were to concentrate on creating an environment conducive to innovation and creativity and setting strong incentives for sustainable political commitment. With respect to creativity, problem solving skills and practical application of knowledge and ideas were to be promoted. All forms of innovation, including social and entrepreneurial innovation were to be taken into account. Artistic creativity and new approaches to cultural issues were also to be considered important means of promoting communication among people in Europe, and the objectives of the European Year of Intercultural Dialogue in 2008 were to be further pursued.

Most frequent activities at the regional, national and European level in the EU Year of Creativity and Innovation (2009) included information and awareness-raising campaigns, measures to spread Good Practices, discussions, meetings and conferences, contests for ideas, exhibitions and seminars.

In general terms we found that the EU Year of Creativity and Innovation

- is awarded more attention in those countries where apprenticeship training is currently being or has recently been reformed and which are taking the opportunity to draw attention to areas deemed important.
- Far less importance is attached to activities for the EU Year in countries where creativity and innovation have actually played a role for some time already (e.g. Denmark, United Kingdom), one reason probably being that there is no separate budget for these. In some cases annual activities already planned were simply placed under the motto "creativity and innovation" in 2009.

¹³ Council Conclusions on promoting creativity and innovation through education and training 2868th EDUCATION, YOUTH AND CULTURE Council meeting, Brussels, 22 May 2008

The 8 key competences

The Maastricht Study¹⁴ stressed the importance of acquiring key competences in the workplace for innovating vocational education and training. Many countries have made transferable or key competences part of their curricula for vocational education and training (a paragraph in the new and amended Austrian training regulations, amongst others) and have incorporated them into practical use.

Example

The **Portuguese** system of initial vocational education and training did not used to provide any activities relevant to creativity and innovation in the context of arts and culture. Currently though most training projects on a dual basis (i.e. education in schools and company-based training) include in their curricula a training component referred to as "socio-cultural learning". This element is to promote skills which are recognized and assessed in the same way as technical and technological skills. Main objective of the training component is to develop autonomy, initiative, learning to learn, creativity and innovation, team work, handling information and problem solving.

Furthermore training courses for apprentices will be extended to an additional 60 units over the coming academic years. This change will allow young people to develop projects to promote "citizenship spirit", "community participation " and "creativity development".

EQF – Focus on Learning Results

The *European Qualification Framework for Lifelong Learning* (EQF) was created for referencing the permeability of education systems in EU Member States. The EQF is based on learning results and is to facilitate comparability and transfer of credits in different sectors.

Increased emphasis on learning results rather than learning inputs also facilitates assessment of learning results with a view to creativity and innovation which by their very nature defy being measured by given inputs.

Entrepreneurship – a Special Key Competence

Entrepreneurial skills are a key competence on the basis of which creativity, a sense of initiative and responsibility and independence can be developed. Entrepreneurial thinking and action in the wider sense are conveyed through all educational measures employed to trigger entrepreneurial attitude and skills, i.e. measures geared towards developing specific values, attitudes and personal qualifications which may convince an individual to start up their own business but which at any rate are essential to salaried employment.

Entrepreneurial education has played a significant role in **Denmark** for some time already and is now increasingly emphasised in other European countries

¹⁴ The Maastricht study was commissioned by the European Commission in early 2004 to assess the progress made in vocational education and training. The study covered EU Member States, EFTA and candidate countries including Turkey. It also contains the results of a survey of general directors for vocational education and country reports. (Leney, T. et al. Achieving the Lisbon goal: The contribution of VET. Final report for the European Commission, 15.10.2004, London, 2004, "Maastricht study": http://www.refernet.org.uk/index_copenhagen.asp)

too (e.g. in Poland). Several forms of learning have already been tried and tested in Denmark: "Young Enterprise", SIMU (simulation companies) – see p. 24 et seq.

Employing New Media and Technologies (ICT, e-Learning)

Major significance is awarded to the new technologies in virtually all national strategies concerning innovations in teaching and learning. This is true both for the acquisition of ICT knowledge and the application of methods and instruments of e-learning, a fact endorsed by the European funding programmes Leonardo da Vinci, Socrates, the Action Plan for e-learning and other European initiatives.

New technologies and new media are believed to increase the scope of development in initial as well as further education and training. Overcoming the barriers of time and location they generate greater flexibility in teaching and learning and allow for individualised supervision of students.

Example

Apprentices in the project *peer learning (UK)* get organized to learn from each other. They establish a social club funded by British Telecom which they have to contribute their own initiative to.

There is another case where apprentices got together to adapt a Video Microsoft Academy programme as a model for a web forum. They were asked to film their own work. They were briefly trained to use a camera and were then allowed to film whatever and however they wanted. A documentation of the training steps they filmed turned out so well it is now being used as training material.

Learning through/by Mobility

Between 2005 and 2006 the European Parliament installed a separate budget to fund the mobility of apprentices.

Experience has shown that, compared to young people who complete their vocational education and training at vocational schools, apprentices who receive education and training both at school and on the job (in a company) have a number of additional challenges to meet in connection with mobility, especially where extended stays abroad are concerned.

Yet mobility not only refers to stays abroad but also to flexibility between different occupational sectors.

Examples

Poland: Due to long-standing cooperation with western European companies there is now a vivid exchange of apprentices with Germany, France and Spain (through the chambers of crafts of Lublin, Gdansk, Poznan, Wroclaw, etc.). The chambers with their contacts are able to organize study trips and apprenticeships to other European countries. Thus, in September 2008 the chamber of crafts of Wroclaw visited its counterpart in Pas-de-Calais (France), along with confectioners', bakers', hairdressers' and motor vehicle mechanics' companies in Arras and St. Martin's Boulogne. In August 2008 the chamber of crafts of Lublin organized a study trip for young hairdressers to Seville (Spain).

Such activities are an opportunity for young people to witness creativity and innovation outside their familiar working space and to bridge the differences in technology and knowledge between different countries. "The more qualified, open and creative vocational school attendants are the better the chances for companies, seeing as it is their only way to success on the European market."

UK: 10% of British Telecom apprentices, under the motto of *Worldwide Challenge*, participate in community projects for developing regions (Asia, Latin America) for two weeks, helping to educate and train young people in other countries and provide specific projects for disadvantaged groups in South East Asia, Africa and Latin America (e.g. building a school in Tanzania).

Apprentices are responsible for raising the required funds not only for their specific project but for their own airfare too (they need between 2000 and 3000 GBP). Thus they acquire "Corporate Responsibility" and learn to raise money at the same time which also calls for creativity!

Learning Environment

It is extremely difficult to convey creativity and innovation with traditional teaching methods generally oriented towards passive forms of increasing knowledge which is why new methods of teaching/learning are called for. "Real life" offers plenty of opportunity to learn. Learning through problem-oriented tasks in different learning environments constitutes a far more "natural" approach than traditional, teacher-focused learning oriented towards subjects and curricula. Such environments might include the workplace, the forest, museums, exhibitions, the city ... This type of active acquisition has proved especially successful in preventing drop outs.

This model which for some time now research has been considering a serious alternative too is characterized by a shift in focus from teachers to students, from teaching to learning. Learning when viewed from the students' perspective becomes a comprehensive process which can take place in different situations and which is active, problem-oriented, participatory and cooperative. The emphasis is no longer on planning classes but on planning and supporting research projects which incorporate several subjects and consider problems as a whole instead of splitting them into different subjects.

Example

Outdoor Education (UK): Webs Furniture Training in Nottingham has been training apprentices in various carpentry and joinery skills for more than 40 years (cabinetry, kitchen construction, upholstery, machine woodworking, etc.). Young people receive training at the workplace and attend training classes at a state-of-the-art training centre once a week.

In addition, all apprentices participate in an outdoor training course once a year. The director at Webs Training, himself a former apprentice and a member of the Outward Bound Trust, is strongly committed to conveying the Trust's values to apprentices.

Artistic Momentums

Projects incorporating artistic processes are not primarily about passing on information one way, but about creative participation in a socio-communicative learning process. These projects are largely geared towards experience and practice.

Examples

Netherlands: *feeling and seeing technology* (developing one's own ideas encouraged by examples)

Austria: *Programme K3*, developed specifically for the dual system for 20 years the programme includes a wide variety of projects for teaching culture in cooperation with apprentices.

Partnerships and Networks

Learning partnerships between companies or regional innovation centres working with the participation of vocational and higher education institutions, as well as team work, teaching and learning peer groups all provide a sound basis for creating synergies and ensuring innovative and effective vocational education and training.

Examples

Germany: The GOLO Project in Wilhelmshaven¹⁵ is a good example for an SME learning workplace partnership. The pilot scheme shows that linking partners in a learning workplace partnership beyond the usual cooperation between schools and companies improves the quality of education and training while creating new training places at the same time.

Lithuania: The Lithuanian Association of Innovative Vocational Education Institutions is an independent NGO of 33 innovative VET institutions. It is non-profit oriented and open to all vocational schools which contribute to reforming and further developing the country's vocational education and training system. Its aim is to support activities and improve the quality of vocational education and training in Lithuania through networks, cooperation and exchange of Good Practices.

Reversing Disadvantages the Innovative Way

Other priorities, along with raising qualification levels of active employees, are to raise qualification levels and improve the reading and writing skills of those less qualified. Qualifications, education and training must not remain the privilege of an elite but must be open to all. Social cohesion and integration are social, as well as economic objectives.¹⁶

¹⁵ GoLo = Gestaltungsorientierte Berufsausbildung im Lernortverbund in der Region Wilhelmshaven. (design-oriented vocational education and training in a learning location cooperation in the region of Wilhelmshaven) the pilot scheme ran from Jan. 1, 1998 to Jan. 31, 1999.

¹⁶ Tessaring, Manfred / Wannan, Jennifer: Vocational Education and Training – A Key to the Future. Lisbon-Copenhagen-Maastricht: mobilising for 2010. Cedefop Synthesis of the Maastricht study. Luxembourg: Office for Official Publications of the European Communities, 2004 (Cedefop Synthesis of the Maastricht Study). P. 53 et seq.

Examples

We found programmes dedicated specifically to disadvantaged young people in **Denmark** und **Hungary**, amongst others. *Cre'actor – new networks to promote young people setting up new businesses* – in **France** is a 3 year project assisting young people with low qualifications to gain confidence and play an active role in society by starting up their own business.

Teacher Training Quality

The quality of vocational education and training is closely linked to the quality of teachers and trainers. They must keep up with the rapid changes of working processes and contents. Vocational teachers' tasks are no longer restricted to simply giving instructions but have been extended to include developing and supervising learning activities and innovations and promoting creativity.

Exemplary Classification

Listing all of the collected Examples of Good Practice by country did not seem much to the point which was to come up with practicable conclusions. We therefore chose a classification method which linked our examples with characteristics closely related to creativity and innovation in (initial) vocational education and training (see p. 11 et seq.):

Conducive Attribute	Activity	Country
demanding and encouraging new ideas and problem-solving strategies	"contest of ideas project Genial!" (ingenious)	LU
	"Innovative Youth"	PL
	Various projects according to Edward de Bono	MT
Learning through/by mobility	2006-2008 12 pilot projects funded	EU
	"Truck Speak"	UK
	Exchange of apprentices abroad, e.g. "Connecting schools with working life",	PL
	"Get ready to work in Europe"	SK
	"vocational students discover the art of glass window production"	SK
	"practical application and extension of	

	<p>knowledge and language skills in Germany"</p> <p>"ArtECult II – Art and European Culture II"</p> <p>"World Wide Challenge"</p>	<p>SK</p> <p>UK</p> <p>UK</p>
<p>Partnerships and networks (cooperation instead of competition)</p> <p>- "internally", but also</p> <p>- between teachers and trainers at schools and in companies, in regional networks, through "learning networks"</p>	<p>"Le Mur" – newspaper for vocational schools in Europe</p> <p>"production schools"</p> <p>„Cre’actor"</p> <p>"Youth Participation Project"</p> <p>"GOLO"-Project</p>	<p>FR</p> <p>DK</p> <p>FR</p> <p>FI</p> <p>DE</p>
<p>New and alternative teaching and learning methods – geared towards practice, problems, independence, projects; mentoring</p>	<p>General emphasis of interdisciplinary competences</p> <p>"Futuralia – Feira Internacional da juventude, qualificações e emprego"</p> <p>"Lunch with Learners"</p>	<p>DK</p> <p>HU</p> <p>NL</p> <p>PT</p> <p>UK</p>
<p>Creating a learning environment</p>	<p>"learning environment thinking model"</p> <p>"SIMU-Company"</p> <p>"Web Furniture Training" (outdoor training)</p> <p>"State Award Fit for Future"</p>	<p>FI</p> <p>DK</p> <p>UK</p> <p>AT</p>
<p>Reversing disadvantages – the innovative way</p>	<p>"PIES"</p> <p>"Social Return"</p> <p>"Cre’actor"</p> <p>"Light up your Life – for Girls with savvy"</p> <p>"production schools"</p>	<p>PL</p> <p>IS</p> <p>FR</p> <p>DE</p> <p>DK</p>
<p>Utilising new media and technologies, especially ICT, e-learning (technical creativity + innovation)</p>	<p>"Invent a Chip"</p> <p>"e-craft Idea Tutor"</p> <p>"youth innovative"</p> <p>(Leonardo Project) "mobile learning"</p> <p>"e-learning in vocational education and training"</p>	<p>DE</p> <p>FI</p> <p>AT</p> <p>IR</p> <p>FI</p>
<p>Artistic momentums (creativity + technical innovation – design)</p>	<p>"Semaine de la créativité ..."</p> <p>"feeling and seeing technology"</p>	<p>LU</p> <p>NL</p>

	"LARC"	UK
	"Design4all"	NL
	<i>Casa Pia</i> activities	PT
Art and culture projects at an informal level	"Programme K3",	AT
	"lebens:bildungs:arbeits:welten"	AT
	"competence proof culture"	DE
Entrepreneurship	"Entrepreneurship Academy"	PL
	General emphasis on entrepreneurship education and training	FI
	Education focus since 2004, renewed in 2007 – e.g. "Danish Innovation and Development Programme", "Young Enterprise", projects at the Roskilde Business College and the Metal College Aalborg	DK
Innovation of the system, e.g. special training and further training of teaching personnel at schools and in companies	"more permeability in vocational education and training - Brandenburg in Europe"	DE
	Call from the ministry of education	SI
	"practical training with projects"	AT
	"validating acquired vocational competences"	PL
	Innovation in vocational education and training / development programme for vocational schools (Org. NIVE)	HU
	"Innovation" as a school subject since 2005	DK
	"Socio-cultural learning" as a training element, additional teaching hours	PT

Note: examples from the 7 EU countries we selected for our analysis are marked with the corresponding country designations written in bold.

6. Conclusions – Recommendations

The current study was carried out with the objective to analyse if and to what extent *creativity* and *innovation* are effectively considered interdisciplinary competences in different European systems of initial vocational education and training. Central recommendations of EU wide relevance¹⁷ were used as references to gain new insights from our findings and to define clear-cut proposals and recommendations which may now be used in the reform process of the Austrian dual system.

To add focus to our objective beyond the actual study an **experts conference** was held in Linz, Upper Austria on November 10 and 11, 2009 under the title "The (almost) Forgotten Potential – Creativity and Innovation in Apprenticeship Training ". The contents of the meeting were prepared by the authors of the report with the Federal Ministry for Education, the Arts and Culture acting as organizers. Additional support was provided by the Institut für Bildungsforschung der Wirtschaft (institute for Institute for Research on Qualifications and Training of the Austrian Economy) and the college of education in Upper Austria.

We invited approximately 50 participants working in key positions in Austrian apprenticeship training: in the relevant federal ministries (Federal Ministry of Economy, Family and Youth, Federal Ministry of Education, the Arts and Culture), the colleges of education, the economic chambers, the Chamber of Labour, the Austrian Trade Union Association, the Business Promotion Institute, the Austrian Employment Services, in selected apprenticeship training companies, guilds, vocational schools (teachers, principals, inspectors), in provincial apprenticeship offices, in culture-oriented organisations such as MAW Steyr, KulturKontakt Austria, departure, etc. Also invited were 2 experts from EU countries (Finbar Lillis, Creditworks/UK, Tünde Salakta, NIVE/HU).

The conference was designed as a working conference to provide "an effective forum for the exchange of practical experiences, concepts and ideas on creative and innovative methods in initial vocational education and training". Our aim was to work out specific measures on the basis of Good Practices and to draft relevant recommendations:

Which measures can we propose to better recognize and promote hitherto largely unnoticed and unexploited potential of creativity and innovation among apprentices?

Participants in the two-day event were highly motivated and engaged in constructive and productive dialogue. Professionally chaired they were able to derive from their own specific experiences a series of **findings and**

¹⁷ In particular the Recommendation of the European Parliament and the Council on key competences for lifelong learning, the European Qualification Framework (EQF) with its new focus on learning results, increased emphasis in utilisation of new media and technologies and learning through/by mobility (see p. 3 et seq.).

recommendations on how to encourage creativity and innovation in apprenticeship training. The recommendations have been included in the report along with the above mentioned measures, framework conditions, concepts and models relevant at a European scale (see page 19 et seq.).

Working Results from the Conference

Summarized below are constructive findings to be used as recommendations:

- Management is awarding central **attention** to apprentices (positive, respectful support from "above").
- Education and training follow a (recognizable) **system**: responsibilities in the company and at school in particular are clearly defined, amongst others.
- **Difficulties** arising upon apprentices' entry are recognized early on to be dealt with constructively.
- **Contact** is sought and maintained between **company – vocational school – parents**.
- **Personality development** is respected and encouraged as a human dimension (this means showing empathy and appreciation!).
- "Discovery behaviour" and "playfulness" are admitted. This creates protected and supported **free space** for curiosity, creativity and innovative problem solutions.
- Time and free space are set aside for **individual initiative** – inducing active behaviour: "I may/I should think independently!", "I may/I should do something differently!".
- **Responsibility** is delegated (in doses) – this enables apprentices to take on **personal responsibility** (especially where connection to the "real world" is apparent).
- **Openness** and **transparency** are practised (by decentralising and flattening hierarchies, amongst others).
- A **timely diversity of methods** is applied; new experience and practice oriented teaching and learning situations are created to encourage **application of new media and technologies**.
- School administrations pay attention to maintaining a **personal diversity in their teaching staff**.
- Additional emphasis is also placed on **training processes** along with training results as before.
- **Student oriented interactions** among apprentices ("peer learning") and colleagues are encouraged, e.g. older, more experienced apprentices and employees act as tutors or mentors for younger ones, promoting "team spirit" and cooperative behaviour.

- **Incentives "from outside"** are sought and taken up:
 - Trainers/trainers are invited from other companies,
 - Related and entirely different occupations and branches are investigated into (exchange of information with companies offering apprenticeships!),
 - Communication among apprentices and between apprentices and teachers/trainers in unusual locations and social situations is encouraged through "outdoor activities",
 - "Role models" (successful former apprentices) are used,
 - Cultural education is awarded value – artists and art mediators invite apprentices to participate in developing and implementing projects, amongst others.¹⁸
- Different **learning environments** are used: school, workplace, forest, museum, exhibitions, city ...
- Creativity, innovation and entrepreneurship are **integral parts** of any vocational training and ideally should not be taught on their own.
- **Mobility** is recognized as useful: exchange beyond the company and classroom is encouraged – through practical training in other companies at home and abroad, amongst others.
- **Networks** are established, sustainable **partnerships** are sought and installed.
- **Small groups** allow more time for each student and ensure better quality of learning at vocational schools.
- The **statutory free space** which must be recognized and utilised.
- It is not mistakes which are pointed out in the first place but successes – in other words: **"give courage!"**
- Opportunities are given to **present creative and innovative results**.
- Vocational school teachers and trainers are offered technical as well as general **further education and training in joint courses**, motivating communication between teachers and trainers with respect to new contents.
- The **ratio between apprentices and trainers** must be optimised.
- **Curricula and training regulations** must be adapted to new requirements more quickly, especially with a view to creativity and innovation; too much regulation must be avoided.
- Companies should **award prizes for success at school**.
- **Trainers** are to be **certified**.
- Increased emphasis will be placed on creating **incentives for quality improvement** in apprenticeship training with respect to creativity and innovation (e.g. a special prize awarded as part of the state award "Fit for Future" in 2009).

¹⁸ e. g. KulturKontakt Austria which provides consulting and financial support on the basis of longstanding practical experience with project series developed specially for the dual system.

- People working in apprenticeship training are given information about existing "Good Practices", e.g. via an "**examples exchange**" on the internet (see below).
- Trainers display a **contemporary approach towards apprentices** in the training process, paying heed to the daily lives of young people undergoing comprehensive development today.

Participants in the conference suggested the following steps for improvement to be taken right away:

- Recognizing commonalities in training and encouraging these accordingly;
- Recognizing different competences, including technical, educational, social and cultural ones, and encouraging them during training and further training;
- Compulsory certification for trainers;
- Establishing dual, i.e. joint further training opportunities for teachers and trainers in accordance with the dual system and developing joint didactics:
 - Perceiving common interests and activities (e.g. general educational and/or cultural contents),
 - Installing a generally accessible information pool for "Good Practice" projects ("examples exchange"),
 - Organising joint regional and supra-regional events and
 - Setting up a suitable coordination point.

The recommendations are addressed

- a) to institutions responsible for relevant legislation (in particular the Federal Ministry for the Economy, Family and Youth, the Federal Ministry for Education, the Arts and Culture, the "social partners"),
- b) to organisations involved in education, training and further training (in particular educational colleges, regional school boards, vocational training institutions, guilds),
- c) to persons directly responsible for education and training: vocational school teachers and trainers in the companies
- d) and to apprentices themselves.

There is always something that can be done differently