

# Innovation in VET

## Innovation for Education – Education for Innovation

*“Denmark is a modern knowledge and production society that places great emphasis on development, innovation, sustainability and welfare. This is not least reflected in our many targeted vocational education and training programs, which hold a key position in our society. “(Christine Antorini, 2014)<sup>1</sup>*

There is a strong focus on innovation<sup>2</sup> in the political rhetoric of the current Danish government in the above quote by the Danish Minister of Education. Innovation is an integrated part of the general legislation on VET. In the framework of VET it is stated in Chapter 1, Paragraph 2, that;

*“Education must be organized so that as far as possible is likely to (...) meet the labour market needs of vocational and general qualifications that takes into account the professional and social developments, including developments in the economic structure, labour relations, workplace organization and technology, as well as an **innovative** and creative workforce”<sup>3</sup>*

In addition to the above mentioned, the Danish Government launched an innovation strategy in 2012 stating that innovation is to be the central driver to the growth and creation of jobs<sup>4</sup>. The overall principles were that this strategy called for enhanced cooperation, improved frameworks for innovation in companies and that it will support a more goal-oriented Danish approach to creating innovative solutions to global challenges. In 2014 a new VET-reform was passed in parliament and promotes considerations of creativity and innovation as important principles:

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<sup>1</sup> <http://www.uvm.dk/~media/UVM/Filer/English/PDF/140708%20Improving%20Vocational%20Education%20and%20Training.ashx?smarturl404=tr ue>

<sup>2</sup> Innovation: Based on “Oslo Manual”, 3rd edition, 2005 an innovation is the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organizational method in business practices, workplace organization or external relations. Innovation is about creating something new with value in the broader sense in mind that is a process in which one sees an opportunity, has an idea, implement it and the idea creates value (Koch and Sørensen, 2010).

<sup>3</sup> Hovedbekendtgørelsen (general framework of VET, 2011)

<sup>4</sup> <http://ufm.dk/en/publications/2012/files-2012/innovation-strategy.pdf>

*“In terms of the Danish education system, it is Students in Danish vocational education and training programmes will acquire better vocational competences in the future. And vocational competences go hand in hand with creativity, innovation, precision and analytical thinking, enabling future skilled workers to strengthen Denmark’s position as a knowledge and production society<sup>5</sup>”*

The Danish Ministry of Education funds projects, developing guidelines and inspiration material in innovation in both IVET and CVET<sup>6</sup>. The digital platform EMU(Denmark’s Learning Portal)<sup>7</sup> has given VET instructors and trainers a knowledge exchange platform and access to materials that can enhance the quality of learning in teaching in VET. An important part of this is a section where VET-teachers can share and distribute materials and find inspiration to enhance the level of innovation in VET-teaching. Another large initiative is the national “Foundation for Entrepreneurship – Young Enterprise<sup>8</sup>”. It works to ensure that the ability to be innovative becomes a fundamental element in all educations from primary school to PhD. Innovation and entrepreneurship must to a higher degree be integrated in the educations and become deeply rooted at the educational institutions.

In spite of these initiatives the overall impression is that there is still a long way to reaching and implementing an innovative practice in the VET-system. There have been a large number of initiatives on national, regional and local level to support innovative thinking and practice in the VET-system. The largest and perhaps the most important initiative is the “Educational Laboratory” with the acronym “UddX”.

This article will introduce the framework, funding and main programmes of UddX and afterwards focus on the outcome of the work with innovation, some of the main results and some of the main challenges.

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<http://eng.uvm.dk/~media/UVM/Filer/English/PDF/140708%20Improving%20Vocational%20Education%20and%20Training.pdf>

<sup>6</sup> CEDEFOP refernet 2010

<sup>7</sup> <http://www.emu.dk/>

<sup>8</sup> <http://eng.ffe-ye.dk/the-foundation/about-the-foundation>

## The Educational Laboratory (UddX)

### **The framework**

The project is initiated of a large VET-institution, Technical Education Center -TEC and Metropolitan University College.

The Capital Region and the European Social Fund have granted 1.7 million euro and 3.3 million euro with a total budget of 6.6 million euro for the entire project. The project has lasted for around three years - from January 2012 to October 2014 with a prolongation for dissemination until April 2015.

The Educational Laboratory, UddX, is a development project, with the main mission to challenge and rethink the way educational institutions in the Capital Region thinks and develops vocational and professional education. Both in terms of learning, teaching, organization, management and guidance: What do we do to solve the challenges we have? How do we create even more and better innovative solutions?

The Education Laboratory experiments with education - from VET to PhD. - through education experiments the intention is to find ways for a more flexible and demand-oriented education system, aiming for more young people to complete an education and that education provides a better response to future skills needs.

The UddX, is a complex project involving 14 partners, of these 10 educational institutions and 4 research and development organizations that contribute with specific knowledge to the project.

- TEC -Technical Vocational Center
- CPH West (VET)
- KTS – Copenhagen Technical College
- SOSU C – Social and Health College of Copenhagen
- Metropolitan University College, within the department of Danish National Centre for the Development of Vocational Education and Training
- HRU – Education and Training, Capital Region of Denmark, Rigshospital
- KEA – Copenhagen School of Design and Technology
- DTU – Technical University of Denmark

- UU København: Youth Guidance Center of Copenhagen
- CEFU, Danish Center for Youth Research, Aarhus University
- UCC, University College C, Program for Counseling and Adult Education

The partner organizations have worked with more than 120 experiments in the different development labs. Their mission is that education should foster development and growth.

A broad range of partners ensures Education Laboratory the complexity and quality of ideas in its educational experiments. The project also ensures that new knowledge and new experimental methods are anchored in the education system.

Providing conditions for sustainable transformations that make vocational and professional educations able to address the present challenges and ensure that the educations are future-proof connecting educational practice, development and research to ensure knowledge that works in new ways creating sustainable and meaningful partnerships between different institutions and between educations and employers.

#### [The five main programmes based on a Baseline-study](#)

UddX has completed a large baseline-study that they have used as foundation for the entire work.

The baseline<sup>9</sup> study is a study initiated by UddX and its purpose is to establish a solid knowledge base that the partners in UddX can use as a starting point in order to plan educational experiments in the five programs discussed in the following. The baseline-study aims to clarify which issues are central for the project and foster change that will bring new knowledge and practice. The baseline study is viewed by the UddX as an essential tool in innovative thinking and change within vocational and professional education.

The baseline-study does not identify where the single experiments should take place, but ensures a solid foundation for those involved in the UddX.

The baseline study identifies five overall action areas which are

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<sup>9</sup> [http://issuu.com/phmetropol/docs/baseline\\_det\\_erhvervsrettede\\_uddannelseslaboratori?e=1998393/1999476](http://issuu.com/phmetropol/docs/baseline_det_erhvervsrettede_uddannelseslaboratori?e=1998393/1999476)



10

**Program 1 – World Class Skills:** is in regards to pedagogical practice, **vocational innovation**, motivation, talent, and curriculum and in how these can be enhanced in order for the profession and professionalism to be renewed.

**Program 2 – Cooperation between companies and educational organizations:** looks at collaboration between companies and educational institutions. This involves working with new forms of collaboration between educational organizations and dual educations and in new kinds of didactic structures for work-based learning.

**Program 3 – The experimental organization:** works with leadership and management, quality, evaluation, new forms of leadership and cooperation.

**Program 4 – Education on demand:** is about skills gap and flexible delivery of education.

**Program 5 – New career paths:** is about new forms of educational guidance and new forms of collaboration with companies.

#### Specific issues about innovation in program 1

The baseline study shows that when it comes to vocational and professional innovation within Program 1, then there are 3 overall tendencies:

- Teaching innovation is often located in separate subjects rather than being integrated into teaching and the core subjects.

<sup>10</sup> <http://uddannelseslaboratoriet.dk/>

- The theoretical instruction in innovation stands often alone and is not in interplay with the practical training in innovation.
- Teaching Innovation is missing linked to the innovation that takes place in practice.

These three issues are the main objectives that the partners in UddX have been addressing with in 23 different experiments.

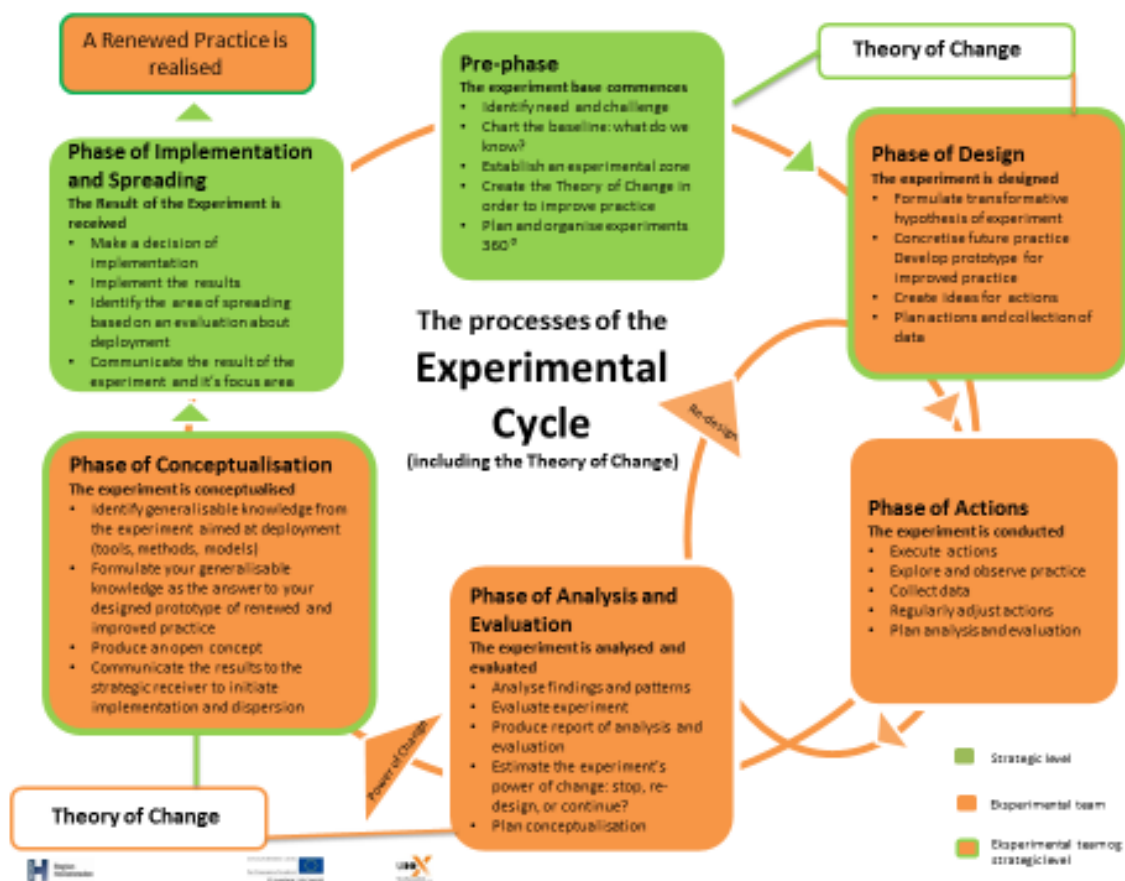
### The Experimental Cycle

UddX has used and further developed the experimental cycle as a method to transform existing practice in to improved new practice

An educational experiment in UddX is defined as a systematic experiment, which is designed to test new methods in a concrete educational context. By experimenting, it is possible to develop and test new ideas and put them together into useful concepts.

Thereby it is possible to work together to renew and improve the daily practice of education. In order to work with many different experiments and sometimes conflicting changes the experiments aim to find answers that make sense in different contexts with practice and to find answers that also make sense in the individual context.

UddX has developed a method for working with educational experiments called The Experimental Cycle. In the process of this method, the first phase is a pre-phase where the needs and challenges are identified, and then the experiment is designed, it is conducted, evaluated, conceptualized and furthermore implemented and realized. The final stage is that a renewed practice is implemented and thus innovative practice is executed. This method includes the Theory of Change in order to structure the work with educational experiments. It was invented over a period of three years by making prototypes of the cycle as interventions. During the process, the UddX have constantly gained feedback from the end-users – teachers and leaders.



11

The experiment cycle consists of six phase:

- Pre-phase
- Design phase
- Operational phase
- Analysis and evaluation phase
- Conceptualization phase
- Finally implementation and dissemination phase.

The green phases are linked to the strategic work, while the orange is associated with the performing work.

One of the main challenges for UddX has been to involve and make sure that the teachers and leaders were using the experimental cycle as the basic concept in working with development of the daily practice.

<sup>11</sup> <http://uddannelseslaboriet.dk/>

Despite the challenges, UddX has actually succeeded in producing and a wide range of experimental data and it has the opportunity to develop concepts for how to work with innovation in vocational and professional education.

### Concepts for innovation in vocational and professional education

The analytical process in Program 1 that has worked with 23 different experiments around innovation has identified four focus areas:

1. Development of a holistic view on innovation.
2. Development of tasks that promotes vocational innovation and includes authentic challenges from practice.
3. Development of a common platform for innovation.
4. Development of cooperation which involve the outside world.

In following the main findings will be shortly presented:

#### **Development of a holistic view on innovation**

One of the central issues in working with vocational innovation is that innovation is predominantly occurs as a teaching subject and it is not included in all subjects on different programs.

It proves again that it is difficult to work with dual education and in same time creating a holistic view of the student's innovative capabilities. It requires thorough preparation, methodical clarification and intensive communication between the educational institution and the practical learning. And it is crucial that the initiative and main responsibility is placed on the educational institution.

An important finding is that working with innovation requires; on one hand that both works across the core subjects in a given education and on the other hand creates a link between educational theoretical work with innovative skills and the practice the student shall be educated and later operate in as a professional learning employee.



## **Development of tasks that promotes vocational innovation and includes authentic challenges from practice**

In order to develop innovative skills it is an important point to create an authentic environment where the learner can solve problems and challenges in the perspective that there is an overarching goal of the task and that it can be used in the real world with change in mind. The prerequisite to involve the student in innovative processes is that they can empathize with the situations that form the basis for learning and makes sense to develop new products or solutions. The idea of an authentic challenge promotes innovative skills.

It is therefore important in working with innovation that the student works directly with issues that are grounded in the real world, either in form of tasks which have a real client and end receiver or in the form of cases that reflect reality.

## **Development of a common platform for innovation**

Working with vocational and professional innovation, has one of the challenges been that there is no common platform for evaluation and assessment of innovation skills.

Such a platform must contain:

- A common conceptualization of what is meant by innovation and how it can be promoted in specific didactic designs.
- Common indicators for when something actually be assessed as innovative.
- A common language between stakeholders in the world of education and practice on how to promote innovative capabilities.
- A common understanding of the concept of innovation with the concept of creativity and their interrelation, including the definition of innovation is to be understood as the development of practical solutions and concepts and not artistic innovation.

## **Development of cooperation which involve the outside world**

As the links with the external practical reality has a central importance for the development of the students innovative capabilities, it has been a central challenge in working with vocational and professional innovation, to establish a binding cooperation between schools and practice. One of the best ways to promote this is by setting up so-called "advisory

boards”, where stakeholders from the dual systems are working together to put innovation on the agenda.

Advisory boards have managed to create a framework for vocational and professional innovation, but has not in itself proofed that it alone can contribute to binding partnerships. Advisory boards are an important step towards developing binding partnerships because they can support efforts to establish a common platform for innovation (see above), but can according to the experiments - not lift the entire task by its own

## Rounding up

Innovation in vocational and professional education is a priority in Denmark on the strategic level, the school level for both teacher and students who all work together toward emphasizing the innovative skills of the students.

UddX is representing a breakthrough of development of methods that enhance innovation in vocational and professional education. The approach and methodology involve the student to take an active part in learning. The results of these experiments have highlighted a new practice in innovation that is more holistic and capable of creating active partnerships between educational institutions and companies concerning common thinking in innovative ways.

Innovation is part of the political legislation in Denmark and it is a political decision that innovation should play an central role in the vocational and professional education sector. Projects surrounding vocational and professional education have earlier focused on how teachers taught about innovation, but innovation is mainly taught and talked about - yet not a holistic practice.

The Capital Region has therefore invested a great deal of money in the project to ensure innovation in vocational and professional education namely the UddX. After three years of experimenting and researching UddX has presented their concept of innovative ways of working with the challenges in the area of constant development in innovation.

Education plays a central role in strengthening the involvement of employees in innovative processes. More focus on innovation in education is the first step on the path towards more innovative employees and to increasing the motivation of students to become

entrepreneurs. The innovation in each school, in the pedagogy, in the school management is the basic for securing the implementation of innovative thinking in practice.

The rationale for the Educational Laboratory UddX is connecting educational practice, development and research to ensure knowledge that works in new ways. It is necessary to think in new ways and in approaches that are more in line with the demands from the labour market and in addition the educational institutions. UddX ignites that there is collaboration between youth, education and workplace to think in innovative ways. The Educational Laboratory UddX has the potential to create breakthroughs in relation to collaboration between educational institutions, work places, politicians and researchers and thereby the architects to a new and innovative educational landscape.

Time will show what the effects of UddX and the many experiments will have and hopefully the experimental cycle will continue to increase innovative competencies among students.

#### What should happen now?

The UddX strives to share their knowledge and have clearly communicated their work methods, tools, experiments, films, activities and information about the project available on their website. The ambition is to launch a national dissemination of results and tools and best practice in order to inspire the educational environment in Denmark.

It is possible to follow the continuing work with articles, teaching tools, conceptualizing books and films. There are plans on translating the work to English and it is possible to follow the progress on [www.uddannelseslaboratoriet.dk](http://www.uddannelseslaboratoriet.dk)

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Links:

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