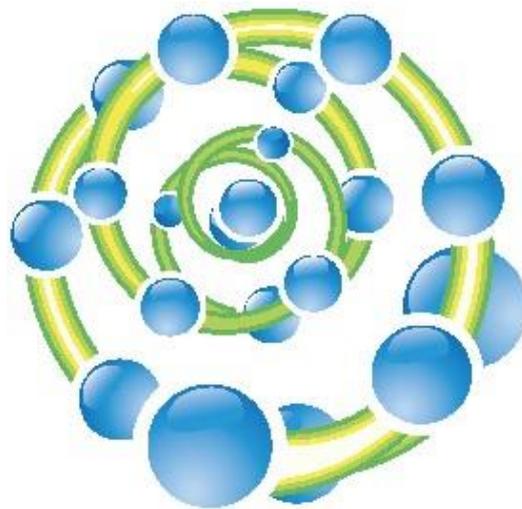


## Innovation in VET

### Estonia



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## A. Introduction

In 2014, the Innovation Union reported that Estonia was among the countries with average performance in terms of innovation in the EU (European Commission, 2014). Although the investments and development costs are high, the economic impact of innovation is modest. A challenge for Estonia is to achieve more synergy between innovation and production. Vocational education and training (VET) has thereby an important role to play as it is one of the tools for economic development.

In the VET development plan 2009-13, the vision for 2020 emphasises that innovation in VET ensures the coping with changing circumstances. It is important that VET responds flexibly and rapidly to the changes in labour market and is innovative in planning the study process, the content of the studies and school management. The plan highlights the development of values and attitudes and also the creativity, innovativeness and entrepreneurial mindset necessary for a successful working life.

In addition to its social and inclusive function, VET should also contribute to innovation and the knowledge based development of economy and society.

While developing the innovative society and economy it is important that people value creativity, innovativeness and professionalism regardless of their position or area of their activity. VET should contribute to changing the value judgements. Valuing professional pride and professionalism will positively affect the image of VET.

In parallel to modernising the infrastructure and renewing the content the 'e-learning development in VET' programme was launched in 2008. The objectives of the programme were to develop e-learning materials and the digital skills of VET teachers as well as to establish an educational technology network to improve the students' mobility and the quality of the study process.

The programme supported continuous training of digital skills of VET teachers and their motivation to create e-courses and e-learning objects based on national curricula. The planned outcome of the programme was to improve the quality of teaching and learning through raising the competence of VET teachers in e-learning implementation. In addition, the broader public was informed about e-learning opportunities.

The objective of the national Lifelong learning strategy 2020 is to apply modern digital technologies in learning and teaching in a more efficient way to improve the digital skills of

the general population and guarantee access to the new generation. To achieve this objective it is necessary to ensure that the teachers, students and headmasters have the required digital skills to achieve the aims of the curricula and the desired learning outcomes in formal education. It is also necessary to create opportunities to ensure the availability of the digital learning resources.

## **B. Background**

### **B.1. Basic information on the initiative**

Since 2010, several VET reforms have been implemented. Legislation, VET school network, structure of occupations and funding principles have been changed. VET students can now acquire a vocational qualification upon graduation. The new outcomes-based curriculum is based on occupational standards and integrates general education subjects with professional studies. In addition, an in-service training for VET teachers and the production of new study materials have taken place with the aim to render VET studies more learner-centred, creative and effective.

According to surveys, some teaching methods in VET do not motivate students. The methods are often not interdisciplinary, do not reflect real life and do not take into account students' individuality. According to the survey conducted in 2012, one of the negative aspects was the lectures as the main teaching method. On contrary, students evaluated positively the flexible study arrangements, e-learning and the teachers who implemented various teaching methods (Praxis, 2012).

Country's population is ageing and there is a decrease in the share of young people. While the number of lower and upper-secondary school graduates is decreasing the share of adult learners in VET is increasing. An e-learning in VET provides an opportunity for flexible study arrangements for several target groups. It creates additional opportunities for effective lifelong learning and raises the competitiveness of VET graduates in the labour market. High quality VET also increases the number of VET students, raises the competitiveness and contributes to the regional development.

To provide flexible and diverse learning methods based on the needs of society and the labour market, it is important to develop modern study materials, organise appropriate training for VET teachers and to ensure a study process where the individual needs of a student are taken into account. E-learning training for VET teachers raises their competence in effective use and design of various e-learning materials. The e-learning courses support the study process in school and enable different target groups to participate in VET.

In 2008-13, the European Social Fund (ESF) programme 'E-learning development in VET' was implemented. The programme's general aim was to enhance the mobility of learners and the quality of VET. More specifically the objectives of the programme were:

- contributing to the development of modern and high quality e-learning study materials, making them available to all VET teachers and students;
- organising teacher training events to raise the professional competence of VET teachers in the implementation of e-learning tools and opportunities;
- improving the availability of information about e-learning for VET institutions and the wider public.

Before the launch of the programme, a survey on the implementation of e-learning tools in VET was carried out by the Tallinn University (Ülikool, 2008). The study showed that e-learning practice and readiness of teachers to implement e-learning varies across VET providers. The differences were discovered also in such external factors as access to ICT resources and internet, availability of hardware, software and IT-services. According to the survey, most of VET teachers had access to computers, including at home. Three-fourths of the respondents used ICT resources in teaching. More than a half of the teachers were using computers regularly. The competence level of VET teachers in e-learning was very inconsistent and about a half of the teachers expressed their need to be trained in e-learning methods.

## **B.2. Rationale**

The programme 'E-learning Development in VET' has been chosen to introduce the innovation in VET because it not only involves developing and introducing the information technology solutions of digital era but also carries a much broader meaning. On the one hand, the e-learning materials provide the opportunity to make studies more diverse and attractive. On the other hand, the continuing training and seminars organised for VET teachers in developing new e-learning materials have given a deeper meaning to the modern learning approach. The seminars and conferences that were organised during the programme raised discussions on the contemporary learning approach and on the changed role of the teacher in study process.

## **B.3. Initiators and stakeholders involved**

The programme 'E-learning Development in VET' was initiated by the Ministry of Education and Research, to raise the quality of VET and to integrate e-learning methods into the study process. The programme was implemented by the Information Technology Foundation for Education (HITSA) whose main role in Estonia is to support the integration of ICT into the study process in preschool, general, vocational and higher education. The need for e-learning resources was mapped in cooperation with the National Exams and Qualification

Centre (currently Foundation Innove) that is responsible for developing curricula and study materials in vocational education. The results of the mapping revealed that in several fields of studies there was a shortage of modern digital study materials.

The consortium of Estonian e-Vocational School was participating in the programme, as one of the partners. Established in 2005, it consists of 27 VET schools and eight professional higher education institutions. The consortium initiates and facilitates the cooperation in e-learning between vocational education and professional higher education institutions. It operates at Information Technology Foundation for Education and its role is to initiate the cooperation with the e-University consortium, the Ministry of Education and Research and other organisations in Estonia and abroad, in the fields of curricula development, organisation of trainings for teachers and IT/education specialists, developing and implementing the e-learning courses.

## **C. Implementation**

### **C.1. Implementation arrangements**

In 2008-13, the HITSA Innovation Centre offered several application rounds to design e-learning resources such as e-courses and digital interactive learning objects. Teachers submitted their applications via an online application system. The applications were assessed by a board on the basis of selection criteria such as accordance with the national curricula and filling the gaps in already existing e-learning resources. The eligible applicants designed e-learning materials which were afterwards presented to their colleagues. All materials are now freely accessible to the public in the repository <sup>(1)</sup> of the HITSA Innovation Centre.

A training programme was started to provide VET teachers and IT/education specialists with knowledge, practical skills and experience in designing e-learning resources. During the programme new courses were designed and the existing ones were updated. The courses consist of interactive learning materials and descriptions of the learning processes. All courses were presented publicly and are now freely accessible to the public in the repository of the HITSA Innovation Centre in their database.

Vocational schools and the publicity were constantly informed about the new e-learning resources as well as about the possibilities to participate in various courses aiming at designing e-learning resources. The main source of information was the newsletter of the programme that provided articles about actual issues in e-learning. Numerous seminars and information days took place in different places in Estonia. By 2012 the increased amount of the new e-learning materials triggered more interest in the use and personalisation (learner-oriented) of the e-learning resources. That is why most seminars and information days took place in the second part of the programme.

### **C.2. Financing**

The total budget of the programme was EUR 2.2 million. Fifteen percent was co-financed by the state and 85% by the ESF.

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<sup>(1)</sup> See <http://www.e-ope.ee/repositoorium>

### **C.3. Cooperation arrangements**

HITSA was responsible for designing and implementing the training programme, providing training activities, administering development of study materials, organising the activities of IT/education specialists' network of the partner schools. Its role was also the general coordination of the programme, the submission of reports, the management of the budget and the communication with the partners. The quality of e-courses and e-learning objects was a shared responsibility between the directors and the IT/education specialists in the partner schools acting as contact persons with HITSA. The IT/education specialists were also involved in planning and conducting courses and seminars to improve the teachers' ICT competences. A network of IT/education specialists was built and connects not only different vocational schools to each other but also with higher education institutions.

The programme had a council whose role was to monitor and coordinate the activities and the process of achieving the goals of the programme. The council consisted of experts from the Ministry of Education and Research, the Foundation Innove and the vocational schools. The council had up to two meetings in a year where the activities were analysed and recommendations for further progress were given.

## **D. Results**

### **D.1. Positive outcomes and lessons learned**

As a result of the programme, e-courses covering in total 1 222 study weeks were designed. A study week equals to 40 academic hours. Different e-courses were written for 38 curricula (curriculum groups) whereas seven curricula were covered with e-courses for more than 50 study weeks. The individual e-courses were very different in their capacity covering up to 12 study weeks. HITSA coordinated the design of e-courses so that the curricula where the teachers were not very active would be covered as well. Particularly valuable was the cooperation between the teachers. The teachers from multiple schools worked together to design 41 e-courses. As an outcome of the programme, 665 different learning objects for 31 curricula were designed as well. The teachers were paid for all the materials that met the criteria. Materials for blended learning where face-to-face classroom methods are combined with computer-mediated activities have proved to be the most effective. It is possible to access all materials in the repository of HITSA.

The training involved 1 413 teachers and IT/education specialists. New courses for the teacher training programme (25 ECTS in total) were designed and the existing courses (15 ECTS in total) were updated. Year-by-year internal trainings have become more popular. They provide an opportunity to focus on the needs of the particular school, to support the cooperation of the teachers and to strengthen the community. Teachers considered this training effective and its influence immediate as they get the same impulse to think in the same direction and to work together (Pajur, 2013).

To inform the public about the programme and its activities, 49 information days and seminars were organised and 24 electronic and paper newsletters were issued (altogether 23 700 copies of newsletter were distributed). Ten press messages were announced and eight articles on the programme were published.

The programme can be considered very successful. All important indicators of the programme – designing the e-courses and learning objects, participating in the courses on use of ICT solutions in VET, designing new ICT courses and updating the existing ones were totally fulfilled. As the programme lasted for six years, several changes in VET took place during this period i.e. new curricula were designed and implemented. Therefore, the needs of the target groups also changed. New ways had to be found to meet those needs. Four times more information activities and events than planned were provided because in the second

part of the programme the need for information on the use of new e-learning materials had increased.

In 2012, the new teacher training 'Teacher of Future' programme was launched to meet the needs of the participants. Its aim was to improve digital skills for better coping and further development in education and also to support studies. The programme is based on the International Society for Technology in Education (ISTE) standards. New courses (five ECTS in total) are designed for the programme.

In the end of the programme, a survey was conducted (Civitta, 2014). The survey aimed to evaluate the situation and the tendencies in the field of e-learning in VET in Estonia in 2014.

The information collected through the survey provides evidence that e-learning as an innovation has been widely accepted by the teachers in VET. Most of the teachers use simple e-learning activities. In almost all the subjects the students get electronic feedback, are provided with learning materials via Internet and get additional materials including a list of relevant web addresses. The teachers consider it easy to find appropriate texts, articles and digital learning objects in Internet, while simulations and recorded video lectures are the hardest to find. The teachers value the positive impact of e-learning on the effectiveness of learning. E-learning enables the teachers to make the learning process more student-centred and to better meet the students' needs. The teachers also believe that e-learning enables the students to plan their learning themselves and to improve their ability to work independently. Forty percent of the teachers participating in the survey had created digital learning objects, tools for self-assessment and summative tests for the students.

The students have a positive attitude towards e-learning. In their point of view, at least in some subjects a part of the learning process could be e-learning. In general, the students believe the impact of e-learning on the effectiveness of learning to be positive.

## **D.2. Bottlenecks and challenges**

In 2008-13, several application rounds to design e-learning resources were offered by the HITSA Innovation Centre. Initially, the applications were assessed by experts at the National Exams and Qualification Centre (currently Foundation Innove) once a year. That made the process of getting feedback, making corrections and having the application accepted very long. It was clear that a more flexible and less bureaucratic process was needed. Therefore, some changes were undertaken. Instead of one application round, four at first and later six rounds were offered per year. The right to assess the applications was given to specialists of the same field working in the vocational school. If there was no specialist of the field in that

particular school other than the applicant, an expert from another school was used. These changes made the process of applying much quicker and more flexible.

During the six years of the programme several changes took place in VET. These changes also influenced the implementation of the programme. For example, in the first years new curricula were developed and as the result, some planned e-materials were not 100% in concordance with the curriculum anymore and had to be updated.

Several changes were made in the management and budget, to meet the new needs of the target groups. For example, at the end of the programme when there was a considerable amount of e-learning materials, the necessity for more teacher training events emerged because the teacher's interest in use of e-learning and their activity in participating at seminars had increased. Finally, four times more information events and activities than planned were organised to make the teachers familiar with the use of the e-learning materials designed during the programme.

## Conclusions

In 2008-13, the programme 'Development of e-learning in VET' aimed to increase the mobility of students and to improve the quality of VET through designing e-learning materials, organising teacher training events on the use of e-materials and creating a supporting network. The activities of the programme had the goal to improve the digital skills and the integration of e-materials in VET, to meet the requirements of the digital age society.

The activities of the programme can be divided into three groups:

- designing e-courses and e-learning objects;
- creating new courses and updating the existing ones to improve their digital competences of teachers;
- organising information activities.

All the target indicators of the programme have been met. An improvement in the digital skills of teachers and students has been achieved and more ICT solutions are used for learning and teaching in VET. The classroom activities have become more interesting for students and can be better tailored to their needs. During the programme, networks emerged and are still active. Thanks to the numerous seminars and information events for teachers the understanding of the new learning paradigm and the new role of the teacher has been strengthened. The available ICT solutions make teachers to update their teaching methods and to re-think the learning process.

All the developed e-learning materials as well as the materials of courses on developing digital skills of teachers are available for free on the website of HITSA <sup>(2)</sup>. The culture of sharing has been developed among the teachers.

During the programme some changes were made to keep with changes in the society and to meet the changed needs of the target groups.

The results of the survey conducted in the end of the programme, provide evidence that e-learning has been widely accepted by the teachers in VET and is positively perceived by the VET students.

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<sup>(2)</sup> See <http://www.e-ope.ee/repositoorium>

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