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EDU-VET

E-Learning, Digitisation and Units for Learning at VET schools – Creating online Learning Environments in Technical Education for European metal industry

Learning Outcome Matrix

April 2020

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Project Title: E-Learning, Digitisation and Units for Learning at VET schools – Creating online Learning Environments in Technical Education for European metal industry

Acronym: EDU-VET

Reference number: **2019-1-DE02-KA202-006068**

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The EDU-VET Learning Outcome Matrix (LOM)

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The purpose of these information and charts are to illustrate how outcomes align with teaching and learning methods and assessments in the EDU-VET approach.

The following general ***aims and objectives*** are focused with the LOM:

This Learning Outcome Matrix is designed to inform about the development of the curriculum structure in VET online and learning courses for the metal industry. Focusing on a learning outcomes approach facilitates the tailoring of the pedagogic induction resources. This provides the possibility to suit specific cultural and societal values and ensures that local issues and necessary topics are addressed within the EDU-VET approach.

The ***topics*** addressed in the EDU-VET-measures for **persons who learners in vocational schools and part time learner of full time learners in the field of VET** in the metal sector are:

General part of EDU-VET measures

1. A short overview of project objectives and aims to achieve
2. Introduction to the EDU-VET curriculum
3. The target group - Characteristics of the EDU-VET target group, their needs and expectations
4. Introduction to the developed online environments

Subject related part of EDU-VET measures:

5. Offering of innovative ways of eLearning for VET in the metal industry
6. Development of a modular system to learn in different European countries in a similar and adjusted way
7. Providing of interactive learning online as well as skills and competences tests
8. Development of guidelines which offer information on the handling of the EDU-VET curriculum and the EDU-VET online courses
9. Development of an innovative online showroom for showcases of enterprises in the metal industry, their processes and products

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Important Aspects and Challenges for **persons who learners in vocational schools and part time learner of full time learners in the field of VET** in the metal sector are:

The EDU-VET online and blended learning approach offers new possibilities to rethink VET in metal industry and enhances the access of the learners to training and qualifications. This is the reason why in EDU-VET VET-schools and enterprises cooperate to meet the economic needs of practice and the world of work. It is crucial to have a strong and sharp curriculum behind EDU-VET, which ensures quality and provides both structure and hints for VET-teachers, VET-educators and the learners who are in focus.

Important for teachers and trainer in VET are pedagogical approaches and the idea of being "facilitators of learning" and the different style of learning, the quality of the curriculum and their support especially concerning the use of the eLearning platform and the resources.

For vocational schools digitisation is becoming a challenge. Learners are used to new media because they us technical devices like smart phones and tablets in their daily life. But, at school digitisation is not so much in focus so far. For teachers and VET schools the changes in social life and in economy lead to new requirements. In the future VET-school have to provide not only Smartboards or a PC room to show they are ready for a changing situation in life but they also have to focus on providing courses online and integrate eLearning in their daily teaching activities. The main objective of the EDU-VET project is to create new teaching and learning environments for VET (vocational education and training). The project focusses on the development of e-Learning courses. Therefore, the partners will design a curriculum, an online course approach for learning in technical education at VET-schools. This supports both, teachers with adequate innovative learning resources and learners with innovation modern ways to deal with topics and learning activities. With regard to the permanent changes in technology and the use of mobile devices the partners focus on the design of an innovative learning environment which combines the aspects of blended learning and digital media.

Here EDU-VET offers flexibility, accessibility and affordability allied to a persistent need for up-skilling are the main reasons that this modern phenomenon will continue to thrive into the future. In addition to that, the main challenges are being authentic, the motivation of students, patience in the tutoring and mentoring processes and a stable technology.

Target groups are learners in vocational schools like apprentices and part time learner of full time learners. The range is huge in the partner countries and this is one reason why these countries were selected. The transnational focus opens different environments and target groups specifics which couldn´t be found just in one place. And this makes a common shared approach more useful because it also offers chances to change the country you are learning in without such a big change on the basis of a shared EDU-VET curriculum.

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The EDU-VET Blended Learning approach

EDU-VET combines pedagogical needs and approaches with the technical environment based on the blended learning approach.

Blended learning is a mix of e-Learning and classroom instruction. Norm Friesen states that "´Blended learning´ designates the range of possibilities presented by combining internet and digital media with established classroom forms that require the physical co-presence of teacher and students" (Friesen 2012, p. 1)[1].

The objectives for authentic learning in the EDU-VET blended learning scenario are the following:

a) EDU-VET take the learner´s/person´s qualifications and interests into accout and offers learning modules and courses that fit to the needs and fit to the curricular structures of EDU-VET and the partner countries.

b) EDU-VET provides scientifically sound concepts and teaching and learning resources.

c) EDU-VET offers high quality OER.

d) EDU-VET addresses the metal industry where blended learning on the basis of learning platforms is currently not state of the art and here the project offers

e) EDU-VET offers modern learning and takes digitisation in education into account

f) EDU-VET will be sustainable. The EDU-VET approach will be completely transparent. It can be developed to further stages. EDU-VET will provide a sound basis for future work, too. The implementation of EDU-VET and the activities of the partners will ensure that the curriculum, the courses and the handbook which will be there also after the end of the project will be used in the daily work of VET teachers.

g) EDU-VET brings young, potentially young disadvantaged people in contact with interesting knowledge which fit to the needs of economy in the metal sector.

h) EDU-VET can grow and diversify. In contrast to currently available eLearning approaches, EDUVET offers the advantage that traditional modules and foci can be integrated easily also after the end of the project duration.

i) EDU-VET integrates the idea of authentic learning.

[1] Friesen, N. (2012): Report: Defining Blended Learning. On the internet: http://learningspaces.org/papers/Defining_Blended_Learning_NF.pdf, date: 01.04.2020.

The EDU-VET blended learning approach is shown below:

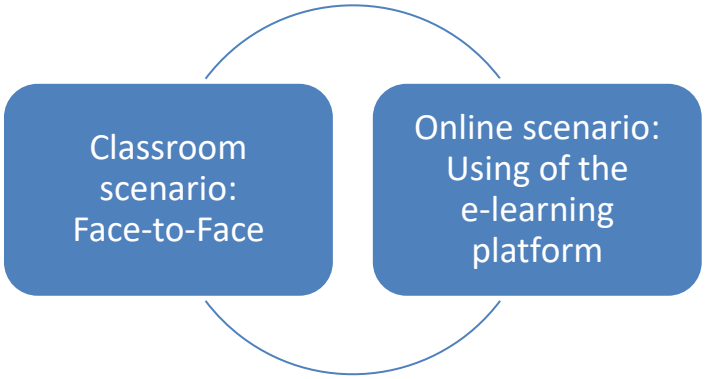

Figure 1: The EDU-VET Blended-Learning Approach

Learning Outcome Matrix (LOM)

Based on the generated modules[2] which are the results of the research of the EDU-VET partners and the blended learning approach the following six LOMs could be derived.

There are three LOMs for each of the three modules. Moreover, these modules are divided into presence and online scenarios, so that there are six LOMs in total.

- LOM1 addresses Module 1 (Drilling/ Reaming/ Counterboring/ Threadcutting) for an online scenario.
- LOM2 addresses Module 1 (Drilling/ Reaming/ Counterboring/ Threadcutting) for a classroom scenario.
- LOM3 addresses Module 2 (Turning) for an online scenario.
- LOM4 addresses Module 2 (Turning) for a classroom scenario.
- LOM5 addresses Module 3 (Milling) for an online scenario.
- LOM6 addresses Module 3 (Milling) for a classroom scenario.

The Learning Outcome Matrices addresses young people who are learners in the field of VET in the metal sector.

Please have a closer look into the following six LOMs. The LOMs already contain examples of how to fill in the individual cells. The examples in the LOMs provide an orientation for filling in the respective LOMs.

[2] For more details about the modules and their subareas, please have closer look into the document „O2-P1-EDU-VET Modules for the VET training measures-EN".

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Learning Outcome Matrix: Module 1 (Drilling/ Reaming/ Counterboring/ Threadcutting) - Online scenario (LOM1)

	Outcomes	**Teaching and Learning activities**	**Assessment**
	Having taken this induction/ course, learners will be able to:	**The learners will be taught to achieve this specific outcome through the following learning-activities:**	**The learners will be assessed on their achievement of this specific outcome through the following assessment-tasks:**
Introductory level (12-14 years)	understand the main aspects and processes and definitions of Drilling/ Reaming/ Counterboring/ Threadcutting.	The learners will get informed by a ppt presentation which provides an overview concerning the topic of Drilling.	An online task via H5P and a short evaluation questionnaire is main basis of assessing the right understanding of Drilling.
Intermediate level (14-16 years)			
Advanced level (16-18 years)			

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Learning Outcome Matrix: Module 1 (Drilling/ Reaming/ Counterboring/ Threadcutting) - Classroom scenario (LOM2)

	Outcomes	**Teaching and Learning activities**	**Assessment**
	Having taken this induction/ course, learners will be able to:	**The learners will be taught to achieve this specific outcome through the following learning-activities:**	**The learners will be assessed on their achievement of this specific outcome through the following assessment-tasks:**
Introductory level (12-14 years)	understand the main aspects and processes and definitions of Drilling/ Reaming/ Counterboring/ Threadcutting.	The teacher who provides an overview concerning the topic of Drilling will inform the learners.	The Drilling fundamental processes will be shown in the metal workshop by the teachers to assess the right understanding of Drilling.
Intermediate level (14-16 years)			
Advanced level (16-18 years)			

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Learning Outcome Matrix: Module 2 (Turning) - Online scenario (LOM3)

	Outcomes	**Teaching and Learning activities**	**Assessment**
	Having taken this induction/ course, learners will be able to:	**The learners will be taught to achieve this specific outcome through the following learning-activities:**	**The learners will be assessed on their achievement of this specific outcome through the following assessment-tasks:**
Introductory level (12-14 years)			
Intermediate level (14-16 years)			
Advanced level (16-18 years)	know about the theory and facilitating of the preparation process of a machine (including testing of NC-programme).	The learners can achieve theoretical knowledge via self directed learning with the support of the online platform.	The assessment will be carried out on the EDU-VET online platform. The learners have to done interactive H5P tasks to acquire theoretical knowledge about the preparation of a machine.

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Learning Outcome Matrix: Module 2 (Turning) - Classroom scenario (LOM4)

	Outcomes	**Teaching and Learning activities**	**Assessment**
	Having taken this induction/ course, learners will be able to:	**The learners will be taught to achieve this specific outcome through the following learning-activities:**	**The learners will be assessed on their achievement of this specific outcome through the following assessment-tasks:**
Introductory level (12-14 years)			
Intermediate level (14-16 years)			
Advanced level (16-18 years)	preparing the machine (including testing of NC-programme).	The learners can achieve these knowledge via self directed learning with the support of the teachers and their systematic coaching.	The assessment will take place in the direct communication situation and directly on the machine.

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Learning Outcome Matrix: Module 3 (Milling) - Online scenario (LOM5)

	Outcomes	**Teaching and Learning activities**	**Assessment**
	Having taken this induction/ course, learners will be able to:	**The learners will be taught to achieve this specific outcome through the following learning-activities:**	**The learners will be assessed on their achievement of this specific outcome through the following assessment-tasks:**
Introductory level (12-14 years)			
Intermediate level (14-16 years)			
Advanced level (16-18 years)	Understand the fundamental and theoretical basis of NC programming.	The learners go through the EDU-VET online platform and edit online tasks.	The assessment will take place on the EDU-VET online platform to do H5P self-testing online tasks.

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Learning Outcome Matrix: Module 3 (Milling) - Classroom scenario (LOM6)

	Outcomes	**Teaching and Learning activities**	**Assessment**
	Having taken this induction/ course, learners will be able to:	**The learners will be taught to achieve this specific outcome through the following learning-activities:**	**The learners will be assessed on their achievement of this specific outcome through the following assessment-tasks:**
Introductory level (12-14 years)			
Intermediate level (14-16 years)	Documenting and presenting the manufacturing process.	The learners discuss different points of view and take part in a pro-contra discussion.	The assessment of getting to know their own ways of presenting and documenting manufacturing processes can be carried out in an oral way in a discussion process.
Advanced level (16-18 years)			