# EDU-VET

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

## The EDU-VET project and its IOs

-1-

Chair of Business and Human Resource Education II
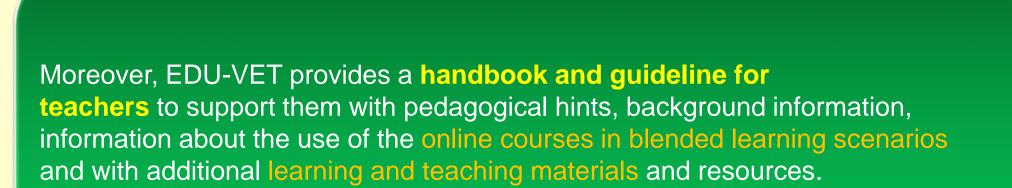Prof. Dr. Marc Beutner
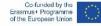
# Aims / main objectives of EDU - VET

The main objective of the EDU-VET project is to create **new teaching and learning environments for VET** (vocational education and training). EDU-VET focusses on the creation of **online courses in a learning platform** and supports the use of digital technologies within learning in the metal sector and reduces or removes barriers to education.

The objective of EDU-VET project is facing the design, the implementation and testing of innovative teaching and learning within the VET metal sector.

The aim is to create an **EDU-Curriculum and online-courses** on a learning platform for initial vocational education (i-VET) as well as an **online-showroom** for insights (texts about objectives, products, processes, contact data, photos, video or audios) into real companies in the metal work sector to foster teaching on an authentic basis.

# Aims / main objectives of EDU - VET

Moreover, EDU-VET provides a **handbook and guideline for teachers** to support them with pedagogical hints, background information, information about the use of the online courses in blended learning scenarios and with additional learning and teaching materials and resources.
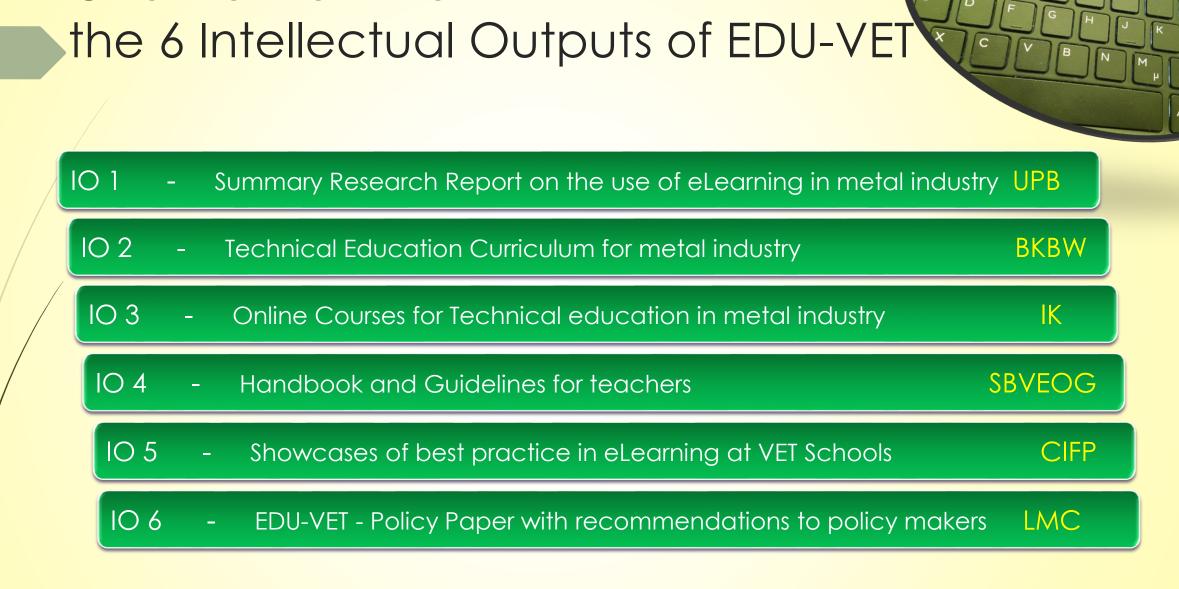
# The 15 results of EDU - VET

(1) the EDU-VET Curriculum

(2) the EDU-VET Learning and Teaching Resources

(3) the EDU-VET online courses for the metal sector

(4) the EDU-VET Online-Showroom with insights into metal companies, best practice information and ideos

(5) the EDU-VET Book on innovative teaching and learning in the metal sector

(6) the EDUI-VET research report

(7) the EDU-VET dissemination materials (posters, leaflets, brochure, cards, pens, flyer)

(8) the EDU-VET Website with Blog

(9) the EDU-VET Guideline for VET educators and teachers

(10) the EDU-VET videos (integrated in the website and the online show-room)

(11) the EDU-VET OER strategy

(12) the EDU-VET digitisation concept for VET

(13) the EDU-VET publications, newsletter and press articles

(14) the EDU-VET research

(15) the EDU-VET evaluation report

# Overview on the the 6 Intellectual Outputs of EDU-VET

IO 1 - Summary Research Report on the use of eLearning in metal industry  UPB

IO 2 - Technical Education Curriculum for metal industry  BKBW

IO 3 - Online Courses for Technical education in metal industry  IK

IO 4 - Handbook and Guidelines for teachers  SBVEOG

IO 5 - Showcases of best practice in eLearning at VET Schools  CIFP

IO 6 - EDU-VET - Policy Paper with recommendations to policy makers  LMC

# Intellectual Output 1 of EDU-VET

## IO 1 - Summary Research Report on the use of eLearning in metal industry UPB

EDU-VET focuses on the design and development of a bespoke curriculum and corresponding Learning course units for VET in the metal industry. Partners will work on developing a modular curriculum to support effective and innovative learning in the field. Partners are also proposing the development an training resource to facilitate the engagement of VET professionals with the new curriculum resources and on-line learning environments developed. The proposed research to be conducted in each partner country will:
(1) identify modules to be developed in the EDU-VET curriculum;
(2) highlight topics to be addressed in the in the courses by the VET professionals;
(3) inform the design of the curriculum modules to ensure that high-quality standards are achieved in content production as (4) get a common feedback on the use of learning units and online courses in the field of VET for metal industry.
Responses to all of the above aspects will inform the curriculum framework and learning outcome matrix that will be used to guide all development actions. The curriculum framework will present content and learning outcome guidance notes on a module by module basis to support the development work of partners ensuring that all the areas of required learning identified are appropriately considered and addressed. Using this learning outcomes approach as a key element of the pedagogic strategy as it allows individual learning content to be localised to take account of the different cultural patterns in partner countries without compromising the value of the learning resource.

# Intellectual Output 2 of EDU-VET – Part A

**IO 2  -  Technical Education Curriculum for metal industry  BKBW**

A bespoke, modular VET curriculum for the metal indurstry will be developed as a basis for the online courses and learning modules on the learning platform to be developed.

The idea is to support the acquisition of key high-value competences necessary for the establishing modern and innovative learning in the field with as comparable European focus. The development of this new curriculum will require an 'ab initio' approach as there is little in terms of available coherent educational resources addressing the target groups or the green entrepreneurship area in any partner country.

It is accepted that considerable differences in business cultures, market opportunities and external supports for the development of the will exist in partner countries, therefore, the range of modules required to address the topic area will necessarily be comprehensive to ensure the curriculum has a practical value in all partner countries. The agreed learning outcomes outlined in the Summary Pedagogic Research Report will be the constant benchmark for partner work and this will allow partners to tailor content to suit local cultural and societal values. Demonstrating the flexibility of the proposed curriculum will also aid further transferability beyond the project consortium. The curriculum developed will specifically address the needs of nascent green entrepreneurs and microbusiness owners in terms of appropriateness of learning environments, structure and relevance of learning content and accessibility of learning platforms.

# Intellectual Output 2 of EDU-VET – Part B

## IO 2 - Technical Education Curriculum for metal industry                    BKBW

The following Ideas for module headings are indicative of the issues to be addressed in the EDUVET curriculum. The actual topics developed will be identified in the course of the research being conducted in each partner country.

Core idea: Manufacturing work pieces of different work piece types with 3 different manufacturing methods

(1.) Drilling/Reaming/Counterboring/Threadcutting (Bohren/Reiben/Senken/Gewinden)

DRCT-Part _1: small diameters/low bore depth (flat) bores of different types: blind/through bores, fitting bores, tapered bores (steps a-f)

DRCT-Part_2: medium diameters/medium depts bores of different types: blind/through bores, threaded bores, counterbores (steps a-f)

(2.) Turning (Drehen)

TURN-Part_1: Simple external contour (steps a-f)

TURN-Part_2: Medium complex external contour with groove and thread (steps a-f)

TURN-Part_3: Simple internal contour (steps a-f)

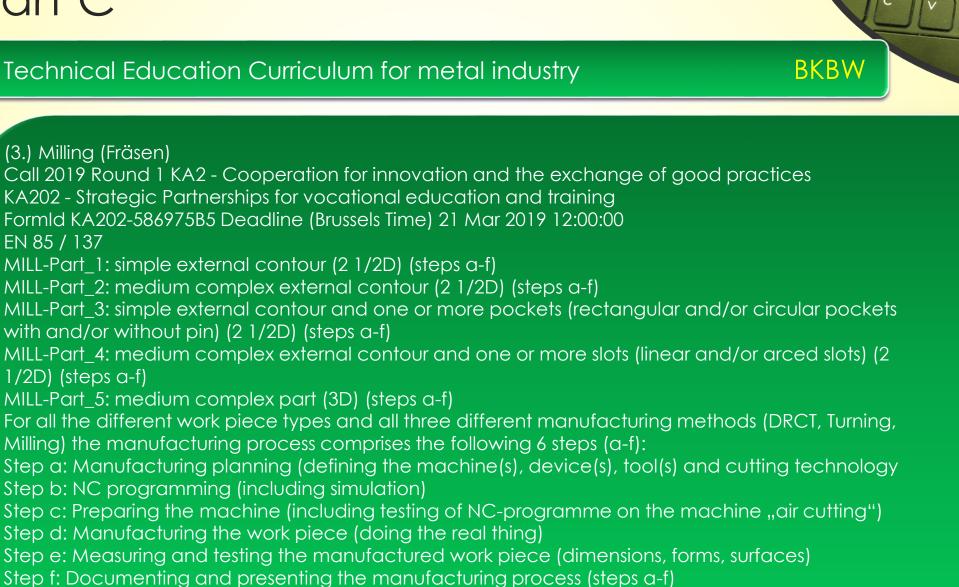TURN-Part_4: Medium complex internal contour with groove and thread (steps a-f)

TURN-Part_5: Medium complex external- and internal contour with grooves and/or threads (steps af)

| IO 2 | - | Technical Education Curriculum for metal industry | BKBW |

(3.) Milling (Fräsen)
Call 2019 Round 1 KA2 - Cooperation for innovation and the exchange of good practices
KA202 - Strategic Partnerships for vocational education and training
FormId KA202-586975B5 Deadline (Brussels Time) 21 Mar 2019 12:00:00
EN 85 / 137
MILL-Part_1: simple external contour (2 1/2D) (steps a-f)
MILL-Part_2: medium complex external contour (2 1/2D) (steps a-f)
MILL-Part_3: simple external contour and one or more pockets (rectangular and/or circular pockets with and/or without pin) (2 1/2D) (steps a-f)
MILL-Part_4: medium complex external contour and one or more slots (linear and/or arced slots) (2 1/2D) (steps a-f)
MILL-Part_5: medium complex part (3D) (steps a-f)
For all the different work piece types and all three different manufacturing methods (DRCT, Turning, Milling) the manufacturing process comprises the following 6 steps (a-f):
Step a: Manufacturing planning (defining the machine(s), device(s), tool(s) and cutting technology
Step b: NC programming (including simulation)
Step c: Preparing the machine (including testing of NC-programme on the machine „air cutting")
Step d: Manufacturing the work piece (doing the real thing)
Step e: Measuring and testing the manufactured work piece (dimensions, forms, surfaces)
Step f: Documenting and presenting the manufacturing process (steps a-f)

# Intellectual Output 2 of EDU-VET – Part D

IO 2    -    Technical Education Curriculum for metal industry                    BKBW

It is estimated that the curriculum will comprise approximately 150 hours of learning broken down into approximately 35 hours of face-to-face classroom or workshop instruction and 115 hours of selfdirected learning.

The curriculum will be agreed and designed by all EDU-VET partners with regard to current subject related books already existing curricular structures and sullabi in the partner countries and the exact duration of learning will be decided when the research is completed and the learning levels to be achieved are agreed on.

# Intellectual Output 3 of EDU-VET

## IO 3    -    Online Courses for Technical education in metal industry    IK

According to the EDU-VET Curriculum the partners will work on the creation of the courses and modules. Most parts are online and will be provided via a learning platform like MOODLE.
The partners are pretty sure to take MOODLE for the design of the courses. But, if there would be any difficulties it could also be an adequate other learning platform / online course management system.

MOODLE is a learning platform designed to provide educators, administrators and learners with a single robust, secure and integrated system to create personalised learning environments. It is a web-based and so the EDU-VET courses can be accessed from anywhere in the world. It also offers the possibility to create the courses in multiple languages and tests and tasks can be integrated easily. In the EDU-VET courses VET-teachers as well as learners are both in a true collaborative environment.

The course structure itself is terrific way to construct a shared and active representation of the learning journey that everyone is going through. EDU-VET courses come with introductions, address concrete objectives, offer descriptions and explanations as well as rationales. They include interactive tasks and can include videos as well as audios, photos, images and illustrations. The use of the survey module provides a variety of proven questionnaire instruments for discovering interesting information about the state of mind of the EDU-VET target group.

# Overview on the the 6 Intellectual Outputs of EDU-VET

## IO 3 - Online Courses for Technical education in metal industry IK

In EDU-VET course pages themselves are a main tool for VET teachers, allowing them to add or remove and structure activities as necessary.

The use of Quizzes and Assignments help to structure the courses. At the end of a course or module as general overview is provided to the learners to let them fit to their experiences and knowledge in the wider context of the whole curricular approach behind the courses and modules. Therefore, the courses and modules will be interlinked but designed in a way to fit to the needs of the leaners and their own learning path as well as their own speed.

The integration of the online courses into EDU-VET Blended-Learning scenarios help the teachers to address the learners in an adequate and constructivist way to get them in contact with competences and topics and to have chances for face-to-face discussions and feedback, too, which helps to clarify the learning processes. Some courses will make use of the Wiki, Glossary and Database tools to include quite a lot more interactive content and let the learners be part of the action.

Also, facilitating discussions in forums, as well as asking questions, and guiding learners within the modules and courses creates a specific EDU-VET learning experience with regard to topics of the metal sector.

# Intellectual Output 4 of EDU-VET

**IO 4     -     Handbook and Guidelines for teachers                    SBVEOG**

In this output IO4 the EDU-VET handbook and the teacher guidelines will be created. The partners agree on the structure of the handbook and write it. It is a real published book which will be available on the book market.

The book provides information about innovative learning processes in the metal sector. It is addressed to VET teachers and VET educators and provides insights into the topic. Therefore it comes with:

- an overview on the current situation
- an overview on the EDU-VET approach
- the chances and challenges of online courses and blended learning approaches vor VET
- definitions of digitisation and Industry 4.0 within metal industry
- the EDU-VET curriculum and the use of new media in metal VET
- Research Results of the EDU-VET Research
- Challenges and Chances
- Insights into best practice pedagogical materials and the showcases
- Future developments in the field and insights into courses and modules and needs for further work and accreditation issues.

**IO 5    -    Showcases of best practice in eLearning at VET Schools    CIFP**

IK and the partners will develop an innovative on-line showroom for showcases of enterprises in the metal industry, their processes and products. Such showcases will be collected in each partner country.

The objectives of this on-line showroom are:
(1) to present role models for metal enterprises and enterprise owners to inspire learning and teaching processes and to provide realistic information for teaching processes;
(2) to provide instant access to a library of information resources identified by partners during the research process that might be useful to teachers;
(3) to provide a range of on-line environments and forums where teachers and VET professionals can exchange ideas and practices with their peers in partner countries, and collaborate.

# Intellectual Output 5 of EDU-VET – Part B

## IO 5    -    Showcases of best practice in eLearning at VET Schools    CIFP

The on-line showroom will be an on-line hosted environment running on a web server tailored for the purpose. It will be built on a Content Management System, based on the framework of IKs technical experts. This framework is a scalable, includes features such as language versioning, object relations and ownership models, all with a flexible connection interface. The core technologies behind the framework are Open-Source and include PHP, MySQL Database, Apache Web service and an adequate server. The object-based and modular nature of the framework and the services built on it allow for flexible combining of the available modules as well as cost-efficient creation of new ones should the need for special purpose-built extensions arise.

The on-line showroom will be Web 2.0 enabled and cater for all mainstream social networking activities and will be developed in all partner languages. The portal will be optimized for mobile access and will function equally well on laptop, tablet or smartphone. The proposed technology infrastructure will be developed to accessibility compliance standards. The on-line showroom will also include features like rss feeds from appropriate organisations to ensure that the information available through the portal is always up to date.

# Intellectual Output 5 of EDU-VET – Part C

**IO 5 - Showcases of best practice in eLearning at VET Schools        CIFP**

It will be fully web 2.0 compliant and will include all the standard and expected social media features that are now an essential part of on-line learning.

The partners will collect the showcases and all information and put them together according to a description guideline. This guideline is based on criteria which will be used in the showroom presentation of the information, too.

The partners collect graphics, videos, text descriptions on the enterprises, their processes, aims and target groups as well as on contact data, perspectives and pedagogical hints for schools.

# Intellectual Output 6 of EDU-VET

## IO 6 - EDU-VET - Policy Paper with recommendations to policy makers LMC

The proposed policy paper will consider 5 key issues:
- the importance of the use of new media approaches and eLEarning activities in the field of VET for the metal if education provision is to achieve the penetration levels necessary to achieve the EU 2020 goals
- the need to focus on new emerging opportunities of learning with innovative approaches
- the need of a solid and attuned common curricular approach
- the importance of future accreditation, certification and the fit to EC-VET standards
- the importance of bringing the worlds of VET and work closer together by designing curriculum resources that are relevant to the market place
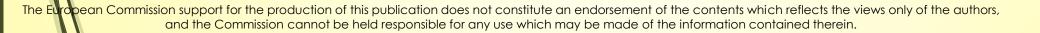
The policy paper will consider why a change of policy approach might be relevant; the policy options available and the pros and cons of each option. Finally, the policy paper will recommend a course of action based on the experiences and lessons learned in the course of the EDU-VET project.

# Contact

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