Upskilling in digital production in vocational training institutions

POLICY DEVELOPMENT | **PRACTICAL MEASURE/INITIATIVE** | AUSTRIA

Timeline

2022 **Implementation** 2023 **Implementation** 2024 **Implementation**

ID number 44485

Background

The digital age has permanently changed the economy, especially in industry (keyword: Industry 4.0), where the real and virtual worlds for industrial value creation processes are visibly merging. Applications such as the 'digital twin' and other simulation technologies, machine-to-machine communication, are leading to an increasing virtualisation of production.

This virtual production requires new competences from the skilled workers, both of a technical and interdisciplinary (e.g. communication and teamwork skills). This in turn has implications for vocational education and training (VET): in order to prepare VET learners and students - and thus future employees in industry - for the virtual production world, the competences required for this must be taught in relevant VET programmes (initial and continuing education). In addition, teachers who are fit and well-versed in the use of these digital tools are needed in order to be able to impart the competences to the students.

Objectives

Within the framework of the initiative, which is a measure of the National Implementation Plan (NIP), the Federal Ministry of Education, Science and Research (BMBWF) is pursuing the relevant goals:

Learners in vocational schools and colleges (BMHS) as well as students at universities of applied sciences (UAS) are to be gradually qualified for the use of digital production tools and thus prepared for the demands of the (industrial) working world.

Description

Qualification in the use of digital production tools should be introduced step by step via relevant BMHS curricula, UAS study programmes and other contemporary qualification methods and be designed in a practice-oriented manner. The particular areas of product life cycle management, digital twin, internet of things, big data, predicted maintenance and augmented reality will be addressed.

Specifically, the following measures will be pursued within the framework of the initiative, starting in 2022:

(a) ongoing establishment of the necessary infrastructure or acquisition of the necessary hardware and software to set up a digital production environment at schools;
(b) necessary adaptation of the curricula, definition of the educational goals related to virtual production as well as definition of concrete contents in the course of the ongoing curriculum reform;
(c) ongoing planning, conception and implementation of initial and further training for teachers and trainers;
(d) implementation of projects that make it possible to achieve the defined educational goals and contents through practical applications;
(e) implementation of subject-specific competitions involving companies in order to be able to communicate the performance of VET learners and students and to promote high potentials.

The foundation for the implementation of these measures had already been laid in 2017 with the Federal Working Group IoT, which continuously carries out school projects, competitions and teacher training on topics of Industry 4.0, simulation technologies, robotics and digital twins at secondary technical schools. Building on these experiences and networks, further development of the measure described is taking place.

2022 Implementation

Within the framework of the existing working group, school projects on the main topics of computer aided engineering (CAE), internet of things (IoT), digital twin and product lifecycle management (PLM) were continuously implemented in 2022.

In addition, the Young Austrian engineering contest, which has been running since 2010, was carried out in 2022 to promote and recognise special technical achievements and special interest of learners with CAE projects at higher technical colleges.

In addition to these activities, conceptual work began on the measure.

2023 Implementation

In 2023, the Young Austria engineering contest was held with a focus on digital and green skills.

2024 Implementation

The 'DigiPro-HTL' project, in which digital methods and processes (e.g. CAE, simulation, digital twin, augmented reality) are implemented in teaching, has been extended under the name 'DigiPro II - Professional digital methods and tools' for the period 2024-29. The contracts with the software providers were therefore also extended. The project was expanded to include the fields of electrical engineering and information technology. The results and developments of the project are published through annual contributions to the ICL/IGIP Conference an international conference on interactive collaborative learning (ICL) and international conference on engineering pedagogy (IGIP).

The teacher training required in this context is carried out in collaboration with the University College of Teacher Education in Lower Austria.

The Young Austrian engineering contest was held again in 2024.

Bodies responsible

- Federal Ministry of Education, Science and Research (BMBWF)

Target group

Learners

Learners in upper secondary, including apprentices

Education professionals

Teachers

Entities providing VET

VET providers (all kinds)

Thematic categories

Modernising VET offer and delivery

Modernising VET standards, curricula, programmes and training courses

Integrating digital skills and competences in VET curricula and programmes

European priorities in VET

VET Recommendation

VET agile in adapting to labour market challenges

VET as a driver for innovation and growth preparing for digital and green transitions and occupations in high demand

Osnabrück Declaration

Resilience and excellence through quality, inclusive and flexible VET

Subsystem

IVET

Further reading

Project information website (only in German):

Related policy developments

2024 **Implementation**

8-Point Plan for digital learning

The 8-Point Plan represents a strategic shift from the initial 'School 4.0' approach, which focused primarily on developing digital competencies among teachers and learners.

AUSTRIA

Type of development

Strategy/Action

plan

Subsystem

IVET

2024 **Implementation**

Strategy for artificial intelligence in education and training

In 2018, the Federal Ministry of Transport, Innovation and Technology (BMVIT) and the Federal Ministry of Digital and Economic Affairs (BMDW) jointly published the paper Artificial Intelligence Mission Austria 2030.

AUSTRIA

Type of development

Strategy/Action plan

Subsystem

IVET CVET

2024 **Implementation**

Digital competence model for Austria (DigComp 2.2 AT)

In 2019, the Federal Ministry of Digital and Economic Affairs (BMDW) published the Digital competence model for Austria (DigComp 2.2 AT).

AUSTRIA

Type of development

Practical measure/Initiative

Subsystem

IVET CVET

2023 **Discontinued**

Digitalisation strategy School 4.0. - now we are going digital

Since autumn 2017, all new teachers must acquire standardised digital competences, including digital subject-specific didactic, within their initial teacher training programme.

AUSTRIA

Type of development

Strategy/Action plan

Subsystem

IVET CVET

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