




Fundación para la Formación Técnica en Máquina Herramienta

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Type of organisation:

SME School University Public Authority
 Training No Profit NGO

Other (Specify)

Fields of action:

SMEs Youth Universities Public Authorities
 Equal opportunities Schools Unemployed

Other (Specify)

Description of the organisation

The Machine Tool Institute is an Advanced and Digital Manufacturing Campus (IMH) that offers specialized, flexible, employment-oriented training, giving priority to the dual model, as well as innovation services for SMEs. The mission of IMH is to contribute to the increase of innovative capacity and business dynamism in the industrial sector in the Basque Country, through actions that encourage the competence development of people and companies. The first steps were taken in 1986 as a group project of professionals in training, who after receiving support from institutions and companies in the Basque Country, set up the Foundation for Technical Training in Machine Tools. The headquarters of the IMH was inaugurated in 1991.

IMH was the first higher education institution in Spain which develop dual education combining on-the-job training and academic studies. From the different knowledge areas that make up the Institute, 100 full-time staff and over 50 collaborators adapt to the specific needs of each company with regards to:

- Dual Engineering University School (240 students)
- Curriculum Vocational training (370 students)
- Continuing Vocational Training (almost 9.000 hours with more than 1.700 students)
- The Centre of Innovation and Transfer of Technology for SMEs competitive development
- Educational Transfer Service for the promotion of technical centres with experience in Venezuela, Mexico, Colombia, Malaysia, China, Indonesia, etc.
- Human Resource Consultancy: as a team of advisers/consultants who focus on providing support to companies in human resources and competence development.

Furthermore, the Dual Engineering University School of IMH is a centre attached to the University of the Basque Country (UPV/EHU). It is the only public university of the Basque Country, which has over 45,000 students and 5,000 world-class academic staff. UPV/EHU offers 67 Bachelor's Degrees in all fields of knowledge. At postgraduate level, it offers 103 official master programmes, 44 professional & expert diplomas and 71 PhD programmes. Right from the start of their activities, the IMH has worked to stimulate the development and progress of the Advanced and Digital Manufacturing Cluster. In an increasingly competitive cluster, one must offer adequate training to the youth, paying heed to concrete needs of companies, regarding both skilled professionals, and the area of preparation in new technology

Experience of the organization in previous European projects

ERASMUS+

- DUALSCI: The main objective of the DUALSCI project is to improve the skills of higher graduates and their employability in the cantons and entities of Bosnia and Herzegovina (BIH).
- EXAM 4.0: EXAM 4.0 aims to establish five European Regional Ecosystems of Competence, bringing together Vocational Training Centres, Higher Education, companies, policy makers and the individual (student, trainee, job seeker ...) to identify and define future skills, needs in the advanced manufacturing sector (AM from now on).
- UPenAUTO: Engineering profiles for the automotive sector and uptake of alternate exchange for Europe's higher education.
- Sky4.0: The main objective of this project is to help aeronautical companies to meet the challenges of Industry 4.0 by improving the soft skills of their human resources.
- Learn&FLY: Learning materials and support tools to encourage student participation in science and aeronautics-related careers.
- Cwihe (Cooperative and Work Integrated Higher Education): CWIHE (Cooperative and Work Integrated Higher Education) is a three-year project funded in the framework of "cooperation for the exchange of innovation and good practice: education, training and strategic alliances for young people". The objective of the project is to constitute a European network of Dual Training in Higher Education to face the current challenges of the model and its deployment at European Union level, as an alternative to fight unemployment and as a valuable tool to promote entrepreneurial skills.
- Cwic (Cooperative and Work Integrated Curriculum).
- LearnIT: The objective of the project is to create tools and guidelines that allow for individualized education in the classroom, taking into account the different levels of knowledge of the students, transferring everything to the knowledge of the CNC, so that these skills are recognized in different countries.

INTERREG

- LIFE LONG LEARNING TRANSVERSALIS (3L-Transversalis) : The aim is to harmonise and strengthen lifelong learning practices to respond to the needs of cross-border territories. The main focus is on mobility, dual training, vocational guidance and vocational experience validation processes.

Experience and Expertise of the organization in the project's subject area

The Dual Engineering University School and consequently IMH has 24 years of experience in dual education. The Engineering School was founded in 1996 based on the deliberative reflections shared with external actors.

When referred to problem/project-based learning and active teaching-learning pedagogies, it has been more than 15 years since the IMH developed these models in its learning processes. In this sense, in recent years different experiences have been applied in engineering subjects, and in the following years, the objective is to develop a radically improved model. From the research perspective, there is also expert knowledge because a workmate developed his thesis and is currently a member of a consolidated research team of the UPV/EHU in this field.

The Advanced Manufacturing, Industry 4.0 or Digital Transformation are significantly changing the economy and will have an important impact on companies. All, but especially SMEs, have an important challenge to face. In this context, the IMH is developing different strategies to support SMEs. Among these, the development of Workshop 4.0. The IMH has an advanced manufacturing workshop, composed of subtractive manufacturing technologies such as additive manufacturing (including three metal technologies), with space for CNC demonstrators such as robotics and vision, in a digitized environment. The development of the competencies that face these challenges and the learning capacity of people are key factors. Therefore, in addition to what is learned (from their reality, STEAM professions), how to learn is also crucial. Within the framework of this project, the IMH can contribute both, technological (what) and methodological aspects (how, with dual training and learning based on problems and projects), focusing on people and their competencies and on the needs of companies, especially SMEs.

Contributions that can be provided to the project

The main reason is to be able to contribute our experience in STEAM training and teaching methodologies based on the ABP as well as learn from partners to improve in this innovative training model today

Reasons of involvement in the project

The objective of the participation in this project is to constitute a European network of STEAM training in Higher Education to face current challenges of the model

Contact Person's Experience and Expertise

Since he began his research as a PhD student and since he joined the didactic area of experimental sciences, José Gutiérrez Berraondo's line of research is based on the design of teaching sequences and learning based on research. The subject of research is the subject of physics in the first courses of engineering training. His work could be highlighted in the identification of difficulties in the concepts of work and energy and the relationship between the two concepts and in the understanding of key ideas in the Generalized Principle of Work and Energy. He has collaborated in several European projects related to the design of dual training in the automotive sector and in the development of competence and transversal profiles, for several countries, for dual training actors (academic tutor, business tutor and manager). He obtained his doctorate in 2018 in the department of Applied Physics I of the Engineering School of Gipuzkoa of the UPV/EHV. He is a member of the Research Group on Physics, Mathematics and Technology Teaching (GIEFMYT), which has been evaluated as a type A consolidated research group by the Basque Government's Ministry of Education, Universities and Research. The research group collaborates internationally with different universities. He has carried out research that, to his extent, have been implemented in the classroom to improve the quality of teaching. He has participated in a pilot program for the development of STEAM activities. He has participated in the study of the effect that self-regulated learning can have on the assimilation of physical concepts in engineering students and its influence on the competence to learn to learn.

José Gutierrez Berraondo: Graduated in Chemistry and Ph.D. Teaching and Research Staff and one of the responsible for redesigning the Degrees for its development based on active methodologies. He is also a researcher in the area of active pedagogies and a member of the research team "Science, Technology and Mathematics Education Research Group (STEM-ERG)" of the UPV/EHU.

- Edurne Iturbe Zabalo: Graduated in Physics and Ph.D. Degree coordinator, as well as Teaching and Research Staff and tutor.

- Ixaka Egurbide Lekube: Graduated in Business Studies. Director of the IMH.