



Companies suggest what skills students would need to help them get into the workplace

The "Academy for Blended Learning" project aims to develop modern teaching materials while allowing teachers to update some of the professional modules in the field of mechanical engineering. Teachers face the challenge of delivering quality teaching in traditional formats. Recently, there has been an increasing demand for distance learning, which naturally requires a different way of delivering knowledge.

Of course, we all expect educational staff to adapt their working methods and didactic approaches to prepare students for the challenges of the 21st century.

It is precisely the integration of project partners and school centres with industry that can ensure that students receive relevant teaching linked to the realities of industry and that they know how to learn how to learn. All this will help them to be more empowered when they enter the labour market and to be more independent and self-initiative in their work.

The project is developing 5 learning materials for students and we have decided to include suggestions from the metal industry. We wanted to find out which skills employers perceive as being lacking in students who have completed their secondary education in mechanical engineering and who go on to work for them.

During the five focus groups held by the project partners in March 2023, we received a lot of really good suggestions and recommendations from the participating companies. 60 representatives of different companies took part.

If we had originally intended to involve only representatives from the metal industry, it became clear during the preparation of the meetings that machine skills are also very important in other industries than metal, e.g. plastics, automotive and paper. Anywhere where there is a lot of repair or fabrication of various machines and tools, and of course where all these assets need to be managed. It was clear from the interviews that the use of modern technology, automation and robotics is on the increase. Optimising work processes and rationalising the use of natural and other resources, as well as taking care of the environment, are all very important.

The companies participating in the focus groups were:

●Poclain Hydraulics d.o.o. Žiri; ●Itas Cas d.o.o. Kočevje; ●Yaskava d.o.o. Ribnica; ●Eti Izlake d.o.o.; ●Qtechna d.o.o. Krško; ●Kovis d.o.o. Brežice; ●BSH d.o.o. Nazarje; ●Odelo GmbH Prebold; ●Virs d.o.o. Lendava; ●Enekom d.o.o. Škofja Loka; ●GKN Automotiv d.o.o.Zreče; ●GZS Združenje za kovinsko industrijo; ●LTH Castings d.o.o. Škofja Loka; ●Arcont d.d. Gornja Radgona; ●TBP Tovarna bovdenov in plastike d.d. Lenart v Slov. goricah; ●Mahle Electric Drives Slovenija d.o.o.; ●Eta Cerknjo d.o.o.; ●Gorenje orodjarja d.o.o. Velenje; ●Plut d.o.o. Dol pri Ljubljani; ●Unior d.d. Zreče; ●Papirnica Vevče d.o.o. Ljubljana; ●Gostol Gopan d.o.o.Nova Gorica; ●Nafta Strojna d.o.o. Lendava.

Projekt Kombiniran učni model za srednje strokovno izobraževanje na področju strojništva in razvoj kompetenc dijakov in učiteljev za digitalno izobraževanje sofinancira Norveška s sredstvi Norveškega finančnega mehanizma v višini 823.296 evrov. Namen projekta je razvoj inovativnega hibridnega modela za izobraževanje v strokovnih programih na področju strojništva.



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A summary of suggestions on what skills companies need.

All the suggestions, with specific company-specific requirements, have been forwarded to the expert group preparing and developing the learning model and the learning materials.

Here is a summary of all the suggestions; the suggestions vary depending on the activity, the needs and the frequency of references in each company.

The data is also useful because it gives an indication of the direction of development of the industry, which is linked to various machine skills. This implies the need to develop skills in the proposed areas, not only in students, but also in those already in employment. This in turn is linked to the preparation of a manual on the acquisition of 21st century skills and competences for teachers of vocational subjects in the mechanical engineering curriculum.

Suggestions of expected competences for students and staff	Number of quotations
Handling of hand tools and machines, physical work, optical detection, knowledge of and measurement with various measuring instruments	14
Handling of CNC machines	11
Combination of mechanical and electrical skills (mechatronics programme), also computer science, mathematics, physics, construction	11
Knowledge of programming, including CNC programming, for CREO	10
Knowledge of metal bending, sheet metal working (milling, turning, welding, etc.), castings	10
Computer, digital, Industry 4.0 skills;	10
Injection moulded plastics processing, joining of plastics	10
3 D modelling	10
Machine element skills	8
Know how to prepare work phases, event planning, costing, problem solving, various analyses, also 6 sigma, flexibility	7
Manual skills	6
Know how to work in a team, basic communication, build confidence to work independently	6
Use of new technologies, including laser (laser cutting, printing...), operation of 6-axis Motomans	6
Understanding of technical documentation (including how to read, how to draw) and writing of various reports	5
Health and safety at work. Workplace (occupational health and safety), also environmental protection	5
Simulation programmes and solutions	3

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Knowledge of materials	3
Knowledge of how to handle machine manuals and how to use various materials	3
Event prediction, diagnostics	2
Maintenance of machines and tools	2
Knowledge of the operation of all phases, up to the final production, therefore broad knowledge, basics of certification	1

The editorial team is considering which of the suggestions made can be integrated into the planned digital textbooks in the most meaningful way. The implementation of the selected proposals will strengthen institutional cooperation between project partners and industry.

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