

New approaches to welding education and training

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Abstract

The current downturn being felt across Europe has taken a toll in all EU countries, without exception. Unemployment is high across most European economies and people are finding it increasingly difficult to find meaningful employment and to put their own skills into good use.

In order to counter the negative trend, improving ones' skills and know-how remains one of the best options available for one to find a good employment opportunity.

This is also the position of the European Commission that, through its own initiatives and policies has tried to generate the conditions for EU citizens to be able to requalify themselves and find new opportunities through which to show their skills.

The welding sector is an interesting case in point. Although still affected by the present negative outlook, it still is a dynamic sector that is constantly searching for skilled, highly trained personnel.

It remains a sector of numerous opportunities for currently unemployed workers, students and trainees looking to put their skills to good use.

The present paper intends to show the alternative approaches that the welding sector has been able to create and implement, with the active contribution of national welding organisations and the EFW, in order to maintain its edge and to stimulate innovation and international cooperation across the European area.

1. Introduction

EU education and training policies have gained impetus since the adoption of the Lisbon Strategy in 2000, the EU's overarching programme focusing on growth and jobs. The strategy recognised that knowledge, and the innovation it sparks, are the EU's most valuable assets, particularly in light of increasing global competition and of the difficult situation now facing most European countries.

By leaving to each EU Member State the responsibility of managing their own education and training systems, Union-level policies are designed to support national actions and help address common challenges such as: ageing societies, skills deficits among the workforce, and global competition. These areas demand joint responses and countries can benefit from sharing experiences.

The EWF has implemented a system that testifies to the positive implications of what can be achieved in cooperation between different countries and national realities. What makes it more relevant is the fact that it has been put in place in 1992 and it joins 43 countries, all EU countries, other European countries and 14 countries from outside Europe, who joined the system in the last 10 years.

Through EWF, the welding community in Europe identified the need to harmonise qualifications long before the EU Lisbon strategy. The work developed with the collaboration the welding organizations recognized in European countries has led to a Training, Qualification and Certification System, recognized by all stakeholders.

2. European education & training and welding education

The European Unions' 2020 Strategy Framework has set up a series of strategic objectives its long term training policies that are as follows:

- Making lifelong learning and mobility a reality;
- Improving the quality and efficiency of education and training;
- Promoting equity, social cohesion and active citizenship;
- Enhancing creativity and innovation, including entrepreneurship, at all levels of education and training.

As these are broad strategic objectives defined at the European level, national countries and education sectors have been often at odds to find strategies that can provide a real impact to their education communities, either basic, secondary and higher education or professional and vocational training.

The EU supports these trends by setting up structures and frameworks that allow EU countries greater possibilities of transparency and qualifications recognition towards its citizens, i.e. through the European Qualifications Framework.

Through an efficient investment in high quality education and training, the EU intends to provide member-states with the conditions for withstanding the current economic downturn period. [1]

On the other hand, new tools and approaches are now becoming commonplace and more widespread in different sectors of training and education, i.e. distance learning and blended learning are increasingly becoming available in different levels of education, giving trainees an alternative perspective on learning and on receiving training widely different from “traditional” educational environments.

In particular, welders’ training and education has seen tremendous innovations both in terms of technological improvements to the profession itself, but also through major renewals of professional training curricula and teaching and learning methodologies.

The EWF has actively promoted innovations in welders’ education and training, so as to be able to offer the best know-how and expertise through its harmonized training system for welding professionals. Furthermore, the EWF and the majority of its members have taken full advantage of EU opportunities to improve training and education conditions, in particular, through the participation in European projects.

3. Innovations in Training in Welding Technology

EWF has been involved in EU projects aimed at developing innovative tools and methodologies for the trainees that take the EWF training and qualification courses. These projects have led to interesting results that can be summarised in the following items.

- **Virtual Systems for Welders' Training**

Supporting the use of virtual equipment for the training of welders has been a topic of special significance for EWF. There are numerous equipments available in the market and EWF has been encouraging the use of these types of tools throughout its network of



Figure 1 – Using a Virtual Welding Training System in a Workshop for the VIRTWELD project, in Lisbon - Sept. 2011

training bodies. The impact of these equipments is significant, not only through added savings in terms of welding consumables and equipment but also in an overall improvement of safety and environmental training standards. Through a European project, VIRTWELD [2], a wider use of these types of equipments has been encouraged in the participating countries, as an added-value for welders' training.

The positive impact of the use of this equipment can be traced to significant reduction in training costs, through savings in the use of consumables and material, as well as in energy consumption. [3]

The use of virtual training equipment is becoming more and more widespread throughout the EWFs' network of training organizations, with practical training being allowed to be taken through the use of these equipments, with several of them being programmed, for instance, in accordance with technical requirements of EWF Guideline IAB-089-2003/EWF-452-467-480-481/SV-01

The projects' partners included VUZ (Slovakia), IzV (Slovenia) and CWS-ANB (Czech Republic).

- **Distance Learning for Welding Coordinators**

Use of distance learning tools for training and education is becoming increasingly widespread in different areas.

In the welding area, GSI-SLV Duisburg has developed distance learning software that allows for part of the training course for Welding Coordinators to be given through distance learning.

The software allows for significant reductions in the duration of the course, approximately 3 months reduction as well as ensuring a high degree of flexibility in terms of course planning and preparation on the part of trainees and trainers. [4]

By introducing distance learning to the welding coordinators' course, the software also allows for reduced employee downtime and overall expenses that would otherwise be necessary for physically attending the course.

The success of the use of this tool in Germany, has led to the EWF's interest in widening its applicability in additional countries. The INNOVJOIN project has been a very successful way of doing this, by translating the tool into Bulgarian, Spanish, Slovak and Turkish and implementing it in the courses being carried out in these countries.

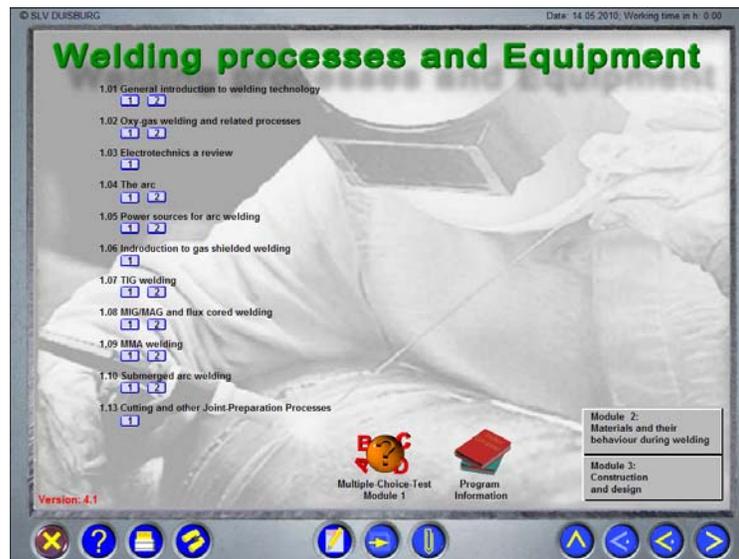


Figure 2 – Screenshot from Distance Learning software developed by GSI-SLV (Germany).

players being able to hire workers and look for jobs to perform. The player will assign welders to undertake these jobs on specific structures, in accordance with specific welding processes. [6]

The game tries to combine a degree of realism, being based on actual welding processes, materials and terminology, but also trying to keep a strong appeal towards its target audience.

The development of this new tool has been one of the main focus of the ACCESSWELD project. Through the project, it is expected to disseminate the game in secondary schools throughout the partners' organizations in Poland, Romania, Italy, Hungary and Sweden, thereby making students more interested in the welding activity and, in particular, the welding profession.



4. Conclusions

The European Unions' strategy for training and education clearly give priorities to activities that contribute to a successful achievement of its stated objectives for the European Strategy 2020.

Consequently, there is a specific focus on improving quality and efficiency of education and training as well as of creating new and innovative training methodologies and tools that can directly benefit trainees, conveying a high quality training and education expertise.

In the specific case of welders' training and education, the EWF has been promoting transnational cooperation of training organizations in order to improve its harmonized training system of welding personnel.

European projects have proved to be invaluable in fostering strong cooperation bonds between European training organizations active in the sector and creating interesting and innovative tools and methodologies that have a relevant impact in the training and education of welding-related personnel.

By improving transnational cooperation between its different national members, the EWF has been able to develop, in these past years, a series of innovative tools and equipment with the proven potential of having a strong impact in terms of European training and education for the welding sector.

5. References

[1] Council conclusions on the role of education and training in the implementation of the 'Europe 2020' strategy

<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:C:2011:070:0001:0003:EN:PDF>

[2] VIRTWELD. <http://www.virtweld.com>

[3] Uran M., Stav J.B., Mraz L., Engh E., Zuljan D., "New Modern Technologies used in Education and Certification of Welding Personnel, The 2nd South-east European IIW International Congress, Sofia, Bulgaria, October 2010

[4] Innovjoin project website, <http://www.innovjoin.com/>

[5] Weldiction Plus. <http://www.weldictionplus.eu>

[6] "WeldPlay Template", ACCESSWELD working document, February 2012