

Structuring dual vocational education and training in a competence oriented manner Aerospace occupations set the standard

BARBARA BURGER, GISELA DYBOWSKI

► **The present paper reports on the MOVE PRO EUROPE pilot project conducted by the German companies involved in the European Aeronautic Defence and Space Company (EADS) and which came to a conclusion in August. The main focus of the pilot project was on two objectives: to use the skills potential within real work processes in a targeted way in training and to make a contribution towards the European debate surrounding competence oriented occupational standards.**

Using the potential within work processes for training

Funded by the Federal Ministry of Education and Research (BMBF) and operating in conjunction with the Institute of Education and Technology at the University of Bremen (ITB) and the Federal Institute for Vocational Education and Training (BIBB), the MOVE PRO EUROPE pilot project¹ was launched at five EADS locations in September 2004. One of

¹ For detailed German language information on the pilot project, please refer to the BIBB MIDO database at www.good-practice.de/mido/. Please also consult www.eads.com/ausbildung for more German language information on contact partners for the pilot project.

the major goals of the pilot project was to make more targeted use of the learning potential inherent within work processes for training in aeronautical occupations. The aim was for trainees to experience the complex requirements of modern skilled work in the aerospace industry within real work situations. Workshops were instigated with skilled workers, executive management at EADS and other aeronautical companies to identify typical work tasks within the occupations of “aircraft electronics technician” and “electronics technician for aerospace systems” and to map these against existing regulatory provision for the two training occupations. A further stage involved the investigation of real work processes to discover which employability skills may be acquired at any given learning station (company place of deployment for trainees). The analysis of the learning stations revealed that these exhibited a consistently high level of learning potential for the work tasks within the occupation forming the object of investigation. This led to collaboration with trainers on the joint drawing up of recommendations for the optimisation of the process and for the didactic structuring of the learning stations. This procedure also served the parallel purpose of training the training staff responsible to conduct learning station analyses autonomously and enabling them to carry out further stages of improvement.

In addition to this, the pilot project developed and tested procedures and instruments to enable domain specific employability skills to be rendered transparent and evidenced. Existing approaches and the experiences associated with these were accorded consideration in the drawing up of these instruments. The procedures were then piloted during the further course of the project, the instruments being designed in such a way so as to be applicable to other training courses rather than merely to the two technical aerospace occupations, something which they had in common with all other procedures within the pilot project (cf. Figure).

Fostering transparency and comparability of competences in Europe

A second major objective of the pilot project encompassed a European dimension. The aim was to describe the competences acquired at the EADS locations during the course of vocational education and training in such a way so as to be able to align these as learning outcomes within national qualifications frameworks and to render them comparable in international terms via the European Qualifications Framework. The lists of occupational requirements drawn up by skilled workers and experts within the workshops formed the basis for a systematic description of the target learning outcomes. Learning station analyses and procedures for the assessment of employability skills

then provide a vehicle for evidencing actual learning outcomes. The occupational work tasks also form a basis for the definition of partial qualifications/units which are capable of certification within the scope of a vocational credit point system (ECVET). The characteristic features of these units/lists of occupational requirements are that they encompass complete actions rather than having their foundations in isolated areas of knowledge and/or skills.

The European pilot project AEROnet (funded by the EU Leonardo-da-Vinci Programme) involved the participation of aerospace companies in France, Spain, the United Kingdom and Germany and was conducted in close conjunction with the MOVE PRO EUROPE pilot project.² The aim was to use a survey and comparison of national lists of occupational requirements within the technical aerospace domains of “mechanics” and “electronics” to analyse the extent to which occupational requirements in Europe exhibited either deviation or congruency, irrespective of the educational systems within which the necessary competences were acquired.

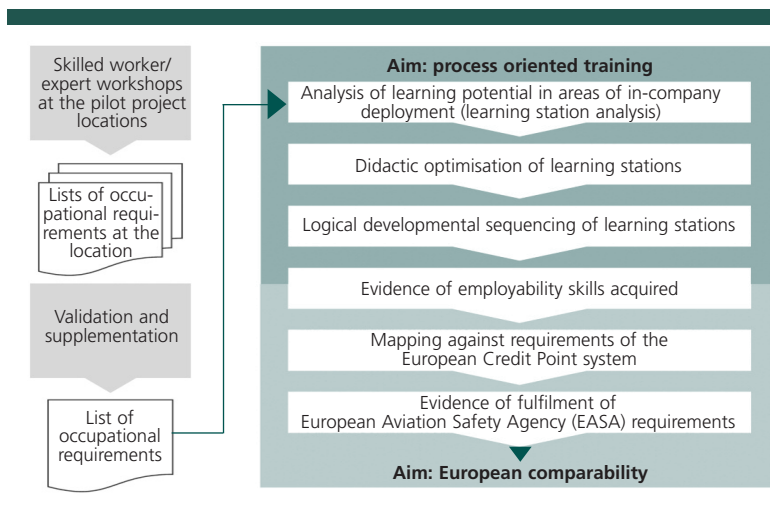
The results showed the following:

- a joint core of occupational work tasks exists in all four countries investigated;
- all four countries divided the main tasks areas of aircraft production into the domains of electronics and mechanics with identical delineation between the domains;
- this meant that the total of occupational work tasks occurring everywhere could be defined as a European core competence in terms of technical aerospace vocationalism.

The results of the AEROnet project also confirmed that occupational work tasks certainly represent a yardstick of comparability below the systematic vocational education and training level within the meaning of the units to be defined within an ECVET system. One further finding is also of interest. Notwithstanding all the differences in the (vocational) training systems of the four countries, training in the aeronautical industry takes place in virtually the same work process related manner (only Spain constituting an exception in this regard). This is all the more remarkable given the fact that vocational education and training, and in-company training in particular, remains systematically undervalued in European comparative terms. The results achieved within the AEROnet project, which were based on a validation of employability skills as learning outcomes, therefore suggest that a new evaluation of the efficiency of in-company learning strategies is taking place in the imparting of occupational competences.

² For further information in English on the AEROnet pilot project, please visit www.pilot-aero.net.

Figure EADS vocational education and training pilot project in Germany: MOVE PRO EUROPE



A further area of momentum within the European dimension of the pilot project has its basis in investigating whether the basic certificates for technical staff issued by the European Aviation Safety Agency (EASA) can be integrated into the training for the two technical aerospace occupations. With this in mind, regulatory provision has been investigated to determine whether amendments are required and the aim is to document the competences acquired during the course of the three and a half years of process oriented training in such a way so as to achieve EASA recognition for the awarding of the certificates. The EASA continues to insist on evidence of knowledge in the form of standardised multiple-choice tests featuring a pass mark of 75 percent. Transparent documentation of the competences and the mapping of these against the requirements of the EASA are, however, only available as an interim project result. Additional realignment of the training occupations would be necessary for full integration of the EASA certificates.

Conclusion

The results underline the effectiveness of work process oriented training strategies and may lend a new impetus to European vocational education and training debate within this perspective. The pilot project and a parallel Leonardo da Vinci project in four European countries also demonstrated that it is possible for occupational work tasks to act as a comparative yardstick for vocational qualifications, and this may act as a vehicle for the identification of sectorally specific European core qualifications. Occupational work tasks ultimately provide a basis for the definition of competence based units which are capable of accreditation and certification as partial qualifications via credit points. ■