

THE EUROPEAN APPROACH TO EDUCATION IN S & T

The rapid growth of new technologies requires that young people and adults be better trained and prepared to face the changes in their professional lives. Competence, versatility and a spirit of enterprise are most necessary today. Without these qualities, Europe will not be able to foster expansion and create new jobs, nor be competitive in the production of modern technology, nor make the best possible use of manifold technological applications.

It has been years that the Commission has recognized that it is extremely important and urgently necessary for the European Community to improve its technological base. If Europe wants to renovate its competitive force, it must swiftly generate a strong technological co-operation. The Commission and the Council have already agreed on the need to exploit the existing potential through a serious engagement in scientific and technological research. This engagement must correspond to an equally vigorous policy of investment in the Community's human resources.

The Community has already launched several initiatives of technological change-bound formation, such as Eurotechnet, the new technologies in schools and, foremost among all, COMETT, aimed at better adapting in all the member States education and training programs

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to long term needs of the industrial sector. The need for a broader cooperation among institutions, industry and social groups is more and more widely recognized and encouraged. More effective action is needed in the field of higher level education and training, as it is the Universities and colleges which are mainly responsible for the initial training and the up-dating of many highly qualified technicians, engineers and researchers, as well future managers. It is particularly important to ensure that industry will be able to exploit the opportunities which will lead to the achievement of the internal market in 1992. COMETT will complement the competitive advantages obtained from establishing the internal market by reducing the obstacles to innovation and applying new technologies.

The actual demand for human resources in new advanced technologies (engineers, researchers and upper level technicians) is clearly greater than the actual supply of personnel both from the quantitative and the qualitative side. This is true not only in absolute terms within the Community, but also in comparison with its strong competitors, USA and Japan. The shortage of qualified personnel can be attributed partly to higher education institutes, which don't form enough personnel, and to industry, which is devoid of a proper system of training and re-qualification.

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In the perspective of a rapidly changing labour market it becomes increasingly urgent to promote programs which associate inter-disciplinary education to personal experience in order to increase the understanding of industrial and economic realities and to form personnel which should be able to master the social consequences of technological change. It is necessary to promote a more effective system of student placement in enterprises and of personnel exchange between universities and enterprises.

Links between University and Industry are profitable for both sides. On one hand, Industry gains admittance to the Knowledge, research activities and infrastructure of higher education, and particularly, to education and training programs. Many enterprises, especially the small and middle-sized ones, encounter a lot of difficulties in securing the necessary competence, particularly if they have to support the entire cost. On the other hand, cooperation between University and Industry offers the possibility of knowing the latest industrial developments to those who have reached a higher education. While students can learn new techniques and new productive processes directly in the factory, teachers can enlarge and diversify their professional interests and make use of equipment which is often not available in universities.

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Some Community programs, such as ESPRIT, RACE and BRITE, have paved the way to an effective European co-operation in the field of research. Additional involvement is needed in advanced training, which should be based on the mobilization of universities and firms in order to forge new associations for joint projects. The Commission has carried out wide consultations which have confirmed the need for both universities and industry to intensify their collaboration at local, regional and transnational levels. It has also confirmed that the cooperation should be based on spontaneous initiatives in order to protect the rich variety of university programs and to let individual associations define their specific goals and purposes.

COMETT I

The "Program on Cooperation between Universities and Industries regarding Training in the Field of Technology" (COMETT I) beginning on January 1st 1986, was adopted by Council Decision of July 24 1986. Its estimated budget was of 45 million ECU. After a preparatory year, 1986, the operative stage lasted three years, from 1987 to 1989. COMETT makes up an important sector of the global Commission program in education and training. In particular, it supports the growth of relations between universities and enterprises on a transnational base. In so doing, COMETT sustains the development of systems and mechanisms which identify the needs of high level professionals in the field of advanced technologies and provides proper solutions. Further, COMETT helps in nurturing social and economic cohesion within the Community, particularly through the transfer of technologies to less developed regions.

The objectives of COMETT I are the following:

- to give an European dimension to cooperation between universities and industries in initial and continuing training relating to demands of innovation, development and application of new technologies and to social changes,
- to foster the joint development of training programmes and the exchange of experience, as well as the optimum use of training

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- resources at Community level,
- to improve the offer of training at local, regional and national levels through the support of proper administrations and to contribute in such a way to the balanced economic development of the Community,
  - to adapt the training level to technological progress and social change, to single out corresponding priorities in present training systems, which necessitate complementary action both in the member States and at Community level, and to promote equal opportunities for men and women.

The COMETT I Program has been articulated into five areas of intervention or "Strands", which however must be considered globally:

Strand A: establishment of UETPs (University Enterprise Training Pool) within a global Community network,

Strand B: student and staff exchanges among universities and enterprises,

Strand C: joint projects among universities and enterprises for on-going training,

Strand D: multilateral initiatives for the development of multimedia training systems,

Strand E: complementary actions in information and monitoring fields.

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The first operative stage of COMETT (COMETT I), as said, lasted three years, from 1987 to 1989. During this period, more than 1300 projects were approved and executed within the Community. In 1989, the total amount of Community funds went from 32.5 million ECU to more than 52 million ECU, with 65% going to the renewal of previous pluriannual projects.

The projects financed within COMETT I have led to:

- establishing 125 Training Pools among Universities and Enterprises (UETPs),
- sending more than 4000 students to other Member States for working stages in enterprises,
- awarding 322 fellowships for personnel exchanges between Universities and Enterprises,
- financing 329 joint training projects and multilateral initiatives in the field of multimedia training.

In practice, that means that projects financed by COMETT I have organized training courses for more than 15.000 participants, produced more than 600 hours of training materials, carried out 60 important studies and research projects, created 30 data banks and published 35 different bulletins. As for the participants, more than 6000 enterprises, 1500 universities and other 1000 organizations have directly participated in COMETT I. Many other organiza-

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tions, particularly small and medium-sized enterprises have been involved in the Program as recipients of higher education and training initiatives.

COMETT I has had a remarkable impact in promoting university-enterprise cooperation at the European level in the field of training. Many projects have regarded sectors which would not have been touched otherwise. COMETT has brought to the education sector and, in a certain way, to industry the benefits of training in the context of cooperation at Community level, and thus has contributed to countering isolationist attitudes.

Methods and procedures for carrying out COMETT I have been as effective as far as institutional structures have permitted. Being essentially an experimental program, in its first stage COMETT made use of a wide approach and supported as many projects as possible. The second stage will entail a more focused and strategic approach. The fact that most of the initiatives are based principally in universities is carefully considered. Therefore, the contribution of enterprises, either as project promoters or as participants, is smaller than it should be.

Knowledge and understanding of COMETT are as not as clear as they should be. There is need of a clearer and more rational image, and of a concerted information and a marketing program (particularly

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in industry). In this context COMETT Information Centers carry out an extremely important role. Under careful consideration is the capacity of financing the actual network, particularly the UETPs, for which COMETT has adopted the principle of "regressive" financing.

In conclusion, we can say that COMETT I has given an important contribution to the development of joint training initiatives between universities and enterprises in the field of advanced technologies. Moreover, programming and preparation of COMETT II have raised greater interest and involvement, both in universities and in enterprises, and will help achieve the objectives of the COMETT Program as a whole by combining the proposals of COMETT II and exploiting the results of COMETT I.

COMETT II

The second stage of the program, called COMETT II, was approved by the Council for Social Affairs on December 16, 1988. Its budget is of 200 million ECU for the period 1990-94. The Council has also expressed a favourable opinion for the Commission to deal with several Countries for opening of COMETT II to EFTA Member States. Proposals concerning formalities and participation of EFTA Countries have been discussed by the Commission and the representatives of these Countries. Understandings reached in these meetings have been transmitted for approval to Community and State Authorities.

COMETT II is not continuing the existing program, but is designed to deepen and enlarge COMETT I. The Decision emphasizes that COMETT is still a Community Program for advanced training in the field of technology and its applications. According to this conception, cooperation between Universities and Enterprises is to be considered an instrument more than a conclusive purpose.

However, the Commission wants to give COMETT more effectiveness than COMETT I enjoyed. Greater attention will be given to changes in the professional profiles and to regional needs, through greater diversification and flexibility in fulfilling the

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program goals. A particular objective will be that of ensuring a larger involvement of small and medium-sized enterprises in all activities. Further, there will be continuous monitoring of the execution of COMETT II programs, in order to ensure that its objectives will be reached in the most effective way.

Major changes will be as follows:

- Strand A (University-Enterprises Training Pools): they will be based on a three year contract, with a maximum budget of 180.000 ECU, in order to let them become established as actual organizations.
- Strand B (student and personnel exchanges): new types of fellowship will be introduced, which will allow a longer and more intense detachment of highly qualified personnel;
- Strand C (joint training programs): a new sector has been created for financing important education and training initiatives, up to 50.000 ECU, and shorter projects for on-going training;
- Strand D: special measures will be devised in order to support the general program, including studies and research in particular fields.