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ABSTRACT

The first part of this document contains reports of committee activities and discussions in six areas: cultural cooperation, higher education and research, general and technical education, out-of-school education, cultural development, and educational documentation and research. The second part of the document includes the full texts of papers presented at an educational research symposium on the theme of the education of the 16-19 age group. Five papers cover the areas of sociological aspects, psychological aspects, problems concerning curricula and examinations, problems and research in technical and vocational education, and economic aspects; a final paper gives an overview of the symposium and summarizes the conclusions reached. (DT)

COUNCIL OF EUROPE

INFORMATION BULLETIN

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April 1973

Contents

The Information Bulletin *which is distributed free of charge three times a year in an English and a French edition, informs on the educational, cultural and scientific activities of the Council of Europe and reprints important policy documents of European interest in these fields.*

First Part

Council for Cultural Co-operation

At its twenty-third Session, held in Strasbourg from 2 to 8 March 1973, the CCC approved seven intensified projects, and requested the means, already implicit in Opinion No. 10, under consideration by the Committee of Ministers, (see *Information Bulletin* 3/1972) for their implementation as from 1974. It also adopted its draft programme for 1974 and laid down indicative guidelines for its programme priorities in 1975-76 and decided to return to these in greater detail at its next session.

INTENSIFIED CO-OPERATION

The CCC reaffirmed its commitment to fulfilling the role, as from 1974, of a focus for educational co-operation in Europe, on the assumption that adequate resources would be placed at its disposal.

The CCC also stressed the importance of striking a balance between the intensified projects which are vital for embarking successfully on more purposeful co-operation in depth and other activities which must be retained in the programme, and considered that, by a process of continual adaptation, its work should become increasingly centred on intensified co-operation.

Intensified projects

In order to satisfy the previously agreed criteria, Intensified Projects must meet the principal concerns of member States and be so organised as to ensure greater involvement on the part of member governments. Thus such projects must arise from real and acute problems whose solution demands intensified action and tangible results within reasonable time-limits.

Considering the simultaneous implementation of the projects selected to be the first concrete step towards the establishment of a programme of intensified co-operation, the CCC decided to approve the following seven projects :

— Permanent education : pilot experiments

— Educational documentation : EUDISED project

— Pre-school education

— Technical and vocational education in the light of mobility

— Equivalence of qualifications

— Curriculum reform and development in higher education

— Organisation, content and methods of adult education.

The first two projects mentioned above are already operational.

SPECIAL PROJECT : MOBILITY OF POST-GRADUATE STUDENTS AND STAFF IN HIGHER EDUCATION AND RESEARCH

Representatives of the countries wishing to participate in this special project met during the CCC Session to declare their Governments' provisional intention of participating in the Special Project Mobility provided that the following conditions were met :

— Participation of a sufficient number of countries ;

— No financial commitment beyond a period of two years ;

— Beginning of the project on 1 January 1974 ;

— A clear indication as to what financial (or equivalent) contribution each country would be expected to make ;

— Co-ordination of the project with any similar work that might develop in other international organisations such as, for example, the European Communities or OECD ;

— Arrangements for financing national contributions (in money or staff) to the project to be worked out with the competent national authorities.

The countries concerned are : Austria, Belgium, Denmark, France, the Federal Republic of Germany, Iceland, Italy, the Netherlands, Norway, Spain, Sweden, Switzerland, Turkey, the United Kingdom.

After discussion of the contents and scope of the project as well as its general administrative implications, the CCC authorised the launching of the project by the Governments concerned.

Final financial commitments will be undertaken at the CCC's September Session after the participating States have agreed on the sum to be allocated each year on each country's contribution (staff, travel expenses, funds etc).

THE EUROPEAN INTER-UNIVERSITY INSTITUTE FOR TELE-TEACHING

In response to the request of the Committee of Ministers that it shall examine the feasibility of setting up an "Inter-university Institute for Tele-teaching" as proposed by the Consultative Assembly Recommendation 650 (1971), the CCC convened a special Group of experts to examine the question. After having been revised and approved by the Committee for Higher Education and Research, and by the Steering Group on Educational Technology, the report of this Group was approved by the CCC and will now be transmitted to the Committee of Ministers.

In requesting the Committee of Ministers to give favourable consideration to the principle of establishing a European Inter-university Institution for Tele-teaching, the CCC adopted its Opinion No. 11, excerpts from which are printed below :

"— The establishment of such an Institute would be both useful and feasible.

— It would be advisable not to use the term 'Tele-University' to describe such an Institute since it is not proposed that the Institute should have a teaching function.

— The main functions of the Institute would be :
  - information, documentation and collection of materials ;
  - organisation of meetings and training courses ;
  - co-ordination, initiation and organisation of research and of comparative and evaluative studies ;
  - co-ordination of the development of multi-media distant study systems.

— No other organisation, national or international, is currently carrying out or planning

to carry out the functions proposed for the European Institute. Moreover, the sharing of these functions between existing national organisations would lead to serious problems.

— The proposed Institute could, for a relatively small financial investment, play an important part in promoting the development of good quality distant teaching materials in the member States as well as lay the foundations for eventual common European production of some materials in particular subject areas. In particular, it would have a valuable role to play in assisting national developments, in making materials produced in one country available to others and in stimulating co-operation at a European level in the further expansion of higher education, especially in the sector of permanent education. It could also render useful services in a broader international context.

— The studies conducted so far indicate that the Institute might initially be established as a fairly small organisation with a full-time staff.

— If the principle of establishing such an Institute were regarded in a favourable light by the Committee of Ministers, on the basis of the report now submitted, the following questions would call for a more detailed study :

- a fairly comprehensive outline of work for the first phase of the Institute's existence, including assignment of priorities to the main tasks in each of the four areas outlined in the report ;
- alternative detailed cost-estimates based on different assumptions about the possible location and the work programme ;
- clarification of the alternative proposals for the location of the Institute."

COUNCIL OF EUROPE HIGHER EDUCATION SCHOLARSHIP SCHEME

The CCC examined the conclusions of the Working Party set up to review questions pertaining to the proposed multilateral scholarship scheme for post-graduate studies and discussed in particular its staffing and budgetary implications.

The CCC agreed that the proposed scheme, based on simple and flexible criteria, should leave administration of the scholarships in the hands of governments wishing to take part in the scheme. However, the Council of Europe should play a role as a Clearing House and should take such steps as might be necessary to ensure coordination and the improvement of the scheme in the light of experience.

The delegations of the following countries expressed their intention of awarding scholarships : France, Federal Republic of Germany, Italy, Sweden and Turkey.

The twenty-third Session of the CCC was chaired by Mr. L. B. van Ommen (Netherlands) and attended by delegates from all member States, a representative of the Consultative Assembly, the Chairmen of the Permanent Committees, as well as observers from UNESCO, the Commission of the European Communities, the European Parliament and the Secretariat for Nordic Cultural Co-operation.

Document : CCC (73) 11.

Higher Education and Research

Strasbourg *30th November - 1st December 1972*

The role of the university in environmental studies

(Meeting of experts)

The role of the university in the teaching of ecology and the study of environmental problems was discussed at this meeting of experts. The questions raised were manifold. After an examination of the problems, the experts agreed on the points set out below :

— Environmental problems concern everybody. It would therefore be desirable that students should be given the opportunity to follow an introductory course in this field. The study of environmental problems should form an integral part of the curriculum in those subjects which are either directly or indirectly related to them.

— Intensified environmental study courses should be offered at post-graduate level, stressing the interdisciplinary aspects. Admission to these courses would necessitate a certain specialisation in preceding studies.

— Universities should organise environmental education courses for adults or help other bodies in organising them.

— Ecology should form an essential part of all environmental courses. They should automatically include the relevant parts of natural sciences, technology, social sciences, agronomy and environmental health.

— Final qualifications should meet academic standards and be based on examination(s) giving weight to the interdisciplinary approach and thinking of the student.

— Entrance requirements to courses leading to a general or specialist diploma should not have a limiting effect. General information courses on environmental problems for adults should not require any previous knowledge in the field.

— Future teachers at all levels of education should be conversant with general environmental problems. Specific attention should be paid to the instruction of university teachers enabling them to take into consideration the environmental implications of their own subject in their teaching and research.

— As for teaching methods, a combination of formal lectures, case studies, group work, and induction into research projects should be offered in the courses. Students should also be given the opportunity of practical work in the field. A network of natural areas allowing the study of the most typical ecosystems and serving as reference points for possible modifications of the environment should be set up in each country by the competent authorities. Scientific stations should stimulate international contacts.

— A certain number of the teachers in environmental courses should come from outside the university, for example from industry, administration, etc. Together with the permanent members of the teaching staff they would participate in the definition and planning of curricula contents and methods.

Believing that different countries would offer different opportunities for study of environmental problems, the meeting stressed the importance of mobility of staff and students. It was also recommended that information about environmental courses offered at different levels should continue to be collected at European level and that the results of the surveys carried out by different international organisations should be analysed.

Documents : **CCC/ESR (72) 58 ; 79 ; 80 ; 84 ; 122.**

Paris *7th - 8th December 1972*

Mobility of post-graduate students and of staff in higher education and research

(Meeting of experts)

This meeting of governmental experts was convened to review details of the Special Project (limited to and financed by member States particularly interested) to promote the mobility of post-graduate students and of staff in higher education and research, and to make concrete proposals to the CCC in this field.

The meeting was aware of the difficulty of reaching agreement on the "List of Problems" prepared by the Secretariat, as delegations attached different priorities to the various themes (sub-projects) under the proposed Special Project.

After a detailed discussion agreement was reached on the following proposals to be submitted to the CCC in March 1973.

— A single "Special Project Mobility", within which both main sub-projects would be carried out, was considered to be a better solution than the splitting up of the overall project into separate projects each having its own steering group and co-ordinator.

— The Project should embrace the two themes of improving information on mobility and devising measures and/or principles for reducing the obstacles to mobility. Work on both of these themes should be conducted simultaneously under the control of a Steering Group comprising representatives of the education authorities of participating countries.

— In the implementation of the Project participating countries would take such action at national level as conformed to their own priorities.

— The cost of the small unit to be established in Strasbourg should be borne jointly by participating countries according to an agreed scale.

The general lines of work in this field were laid down and the following points of detail settled :

All types of persons would come within the ambit of the Project, except undergraduates and research workers in industry. Questions pertaining to undergraduate mobility would be taken up within the framework of a CCC project of intensified co-operation in the field of equivalence.

A network of national information centres or services should be created to improve the collection and dissemination of information.

In discussing the legal, administrative and financial obstacles to mobility, the meeting agreed that efforts should concentrate on preparing recommendations on practical short-term action aimed at promoting mobility. It was admitted that fundamental changes in legislation were at present not to be expected.

At the initial stage, the duration of the Project would be a period of two years.

Documents CCC/ESR (72) 116 ; 121.

Strasbourg *14th - 15th December 1972*

Reform of dental education

(Meeting of experts)

This meeting brought together university teachers in dentistry from sixteen member States and observers from the World Health Organisation, the International Dental Federation and the European Committee for Public Health.

On the basis of a report on "Reform of undergraduate dental education in member States of the Council of Europe" by Professor R. Naujoks (Federal Republic of Germany) the general reform trends were examined by participants. They attempted furthermore to identify the changes needed in present structures, contents and methods of dental education at university or equivalent level. The conclusions that emerged from their discussions are here given in outline :

The general approach to dental education should be sufficiently broad to recognise that whilst the majority of students will enter general practice, there will be some who will engage in specialist practice, research, teaching or community care. Curricula should be planned in such a way that sufficient numbers of students are motivated to develop interest in these fields.

Dental education should be provided in association with medical education and in an environment featuring comprehensive patient and community care, as well as research into medical and dental problems.

As early as possible dental students should be involved in the care of patients and be introduced in professional life.

The core of dental professional knowledge should continue to be acquired at a dental school, but in the training of dentists supervised extra-mural experience of methods of providing dental care and prevention is desirable.

This approach should also be reflected in the contents of dental education. In curriculum design emphasis should be laid on topics such as : basic medical sciences, etiology, pathology, early prevention of oral diseases, clinical methodology and fundamentals of community and public health dentistry.

Dental schools should be encouraged to design and evaluate programmes of integrated teaching. There should be vertical integration between pre-clinical and clinical teaching as well as horizontal integration at all stages of the curriculum.

The predictive value of the present methods of pre-selection of students is unsatisfactory. Development of more reliable methods as well as continuous assessment which may take various forms, are necessary. Also, steps should be taken to analyse the extent to which continuous assessment might replace final examinations. Methods which require active student participation including self-evaluation should receive special attention.

As for the recurrent education of dental practitioners, dental schools should take an ever increasing part in it by organising refresher courses at local and regional levels and by making wider use of modern educational technology. Such efforts should be co-ordinated with the activities of the already existing bodies working in this field.

Another important task will be to encourage the mobility, at the European level, of dental students, dental teachers and practising dentists. In this connection, the feasibility of setting up an Advisory Dental Council should be examined. The Council would aim at preparing and supervising a European agreement on certain standards of academic training in dental schools at university or equivalent level, where research is conducted, and on a list of recommended teaching subjects.

Documents : CCC/ESR (72) 60 ; 66 ; 123.

Strasbourg *16th January 1973*

Council of Europe Higher Education Scholarship Scheme

(Working Party)

The main business of the Working Party was to review the United Kingdom proposal for a multilateral scholarship scheme for post-graduate studies open to all CCC countries and, in particular, to reach agreement on the criteria for fellowship offers to be included in the proposed scheme.

The United Kingdom initiative, it was felt, might serve as a model for similar offers from other CCC countries. The proposed system of the Council of Europe fellowships would complement those offered under bilateral cultural agreements ; students from countries not linked by such agreements will profit particularly therefrom.

Fellowships offered by member States must meet the criteria proposed by the meeting if they are to be accepted by the CCC as part of the Council of Europe Scheme. They should :

- normally be tenable for a period of one to three years ;
- be open only to post-graduate students ;
- be open to candidates from all CCC member States ;
- be administered by the national authorities in accordance with national regulations.

In discussing other points of the scheme, the meeting agreed that countries should remain free either to offer general fellowships or to restrict them to certain disciplines or fields of study (in particular if they are not taught in the candidate's home country) and to research on topics of European interest.

Likewise, it would be up to the country concerned to decide whether candidates should know the host country's language before they arrive or undergo an accelerated language course after their arrival. Some countries may consider it sufficient if candidates have a good knowledge of either English or French.

Host countries shall give consideration to issuing some kind of certificate to post-graduate students having successfully passed a period of study or research under this scheme.

The Council of Europe should assume certain limited responsibilities, as outlined below. It should :

— lend its official auspices to the scheme ;

— receive the fellowship offers and examine whether they fit into the proposed scheme ;

— assist the work by announcing and advertising fellowships ;

— provide information to potential candidates ;

— analyse the working of the scheme with view to maintaining a balance as regards geographical area and disciplines and prepare recommendations for improving the scheme ;

— keep a register of fellows ;

— provide funds for periodical ad hoc meetings of those responsible for the scheme at national levels ;

develop a model form for applications and possibly a model or standard certificate of completion of studies.

Documents : CCC/ESR (72) 90 ; 93 ; (73) 5.

General and Technical Education

London *21st - 22nd November 1972*
London *23rd - 24th November 1972*
Strasbourg *12th - 13th December 1972*

New media and teaching methods — The co-production of films

(Meetings of experts)

Several meetings have been held in London and Strasbourg recently to discuss the various aspects of new educational media and methods.

Experts from five countries met in London on 23rd and 24th November with the main purpose of defining the objectives of a new working party. Before drawing up its draft programme, the experts reviewed the Committee's activities in this field. In particular, they examined :

- the research conducted on teacher training through and in the use of audio-visual media ;
- the seminars on closed-circuit television in various teaching situations ;
- the work done on multi-media systems in school education.

The principal aim of the new working party would be to study the effects of introducing new media and methods in schools. To this end, the experts recommended restricting the choice of subjects, so that a complete technical file could be composed as quickly as possible.

Three topics were chosen :

— School resources centres ("médiathèques"), with a study of their various implications : educational uses, operation, economic aspects, influence on pupils and teachers, revision of curricula, etc.

— The tactical use of new techniques and methods to refurbish existing disciplines or introduce new ones. This subject would be tackled as soon as work on the resources centres had been concluded.

— The initial and in-service training of teachers through and in the use of new media and methods.

Another meeting took place in London, on 21st and 22nd November 1972, to discuss the co-production of teaching aids for the initial and further training of teachers. After viewing a number of audio-visual documents and making a survey of the material available in Europe, the participants recommended the co-production of two series of films and other audio-visual documents : one dealing with audio-visual techniques, the other with teaching methods. Work was allocated as follows :

— "The episcope" (Austria) ;

— "Sound-editing" (France) ;

— "Micro-teaching" (Netherlands) ;

— "The educational uses of one-camera closed-circuit television" (Federal Republic of Germany) ;

— "Closed-circuit television in institutions" (Sweden) ;

— "Learning resources centres" (United Kingdom).

Finally, a last meeting, held in Strasbourg on 12th and 13th December 1972, was also

devoted to examining the co-production of teaching materials. The directors and persons in charge of production, who attended this meeting, viewed and selected audio-visual documents produced in the course of the year.

Their conclusions are summarised below :

Co-production of materials of geography

The four films of the series on geographical regions lying across national frontiers would be completed in 1973 and presented at the next meeting of geography experts. The films were : "The Hinterland of Rotterdam" (Netherlands), "The steel triangle" (France), "Hercynian Mountains" (Federal Republic of Germany) and "Irrigation in the Mediterranean countries" (Spain).

In 1974, a new project in this field would be entered on the work programme : "Modern industry, towns and populations in Europe".

Co-production of materials for physics

In this field, several series of films were in course of production, including : "Wave-particle duality", "Earth in space", "Electrostatics" and "Relativity". A new subject might also be completed in 1973.

Co-production of materials for biology

The film rounding-off the series "The living cell" would be completed by the end of 1973. A number of films in the series "The living body" had already been completed.

As regards films on drugs, the participants were in favour of producing a series of films on this topic at European level. They undertook to approach their national authorities with a view to having this plan put into execution as quickly as possible.

In view of the different attitudes to sex education in the various countries and the controversy which such a project might raise, the participants considered that the time had not yet come to co-produce films on this subject.

Co-production of films for teaching and teachers

The co-production project for this new series as mentioned above comprises six films dealing with equipment and new media, including : the episcope ; closed-circuit television in institutions ; micro-teaching ; learning resources centres ; one-camera closed-circuit television, and sound-editing.

Co-production of films for the teaching of technology

Since the concept of technology was interpreted differently in the various countries, the participants felt that it would be difficult at the present time, to produce a series on this topic. As a first step, existing audio-visual documents would be catalogued.

Documents : DECS/EGT (72) 110 ; 111.

Strasbourg *6th - 7th December 1972*

The technology of modern language teaching

(Meeting of experts)

The meeting discussed in particular research priorities based on the findings of the Council of Europe Symposium on "The integration of audio-visual aids into the teaching of modern languages in the classroom" held in Ankara in 1971. Experts from seven countries attending this meeting dealt also with questions relating to the following fields : educational films, television and radio programmes, co-production, copyright, cost-effectiveness, systems approach, modules, and criteria, in the European context, for evaluation of audio-visual courses and materials.

With regard to the exchange of information on audio-visual courses, materials and equipment in connection with CILT (Centre for Information on Language Teaching, London) and the national centres, participants reported on new developments in this field in their countries. In presenting his report on CILT, Mr. B. Lott (British Council) stressed that, as a European Centre, CILT was already collecting information and conducting research, adding, however, that member States were still lacking national centres suitable for co-operation with CILT. Lately, in some countries — the Netherlands, Norway and Switzerland — efforts were being made to set up centres for this purpose.

In discussing the research themes drawn up by the Ankara Symposium, the meeting was in unanimous agreement that all subjects selected had equal importance. A list of the priority areas for research is given below :

— Establishment of scientifically based lists of lexical and morphological items and grammatical structures of the spoken language for the production of teaching and learning material and for the creation of appropriate evaluation instruments to be put at the disposal of the CCC member states.

— Methods and techniques for curriculum development (definition of aims and operational objectives at various levels of attainment) in this field.

— Study of all kinds of audio-visual aids which can be used in each phase and on all levels of foreign language learning.

— Individual differences in the rate of learning of receptive and productive skills in school education ; evaluation of existing material and production of material for pupils of less than average ability and socially handicapped children.

— Connections between the teaching and learning of the mother tongue and the teaching and learning of other languages.

— Transfer effects between the first foreign language learnt and a second and a third foreign language.

— Comparative study of different types of visual material in the learning of other languages.

— Impact of television and closed circuit television on the teaching methods and attitudes of future teachers and of teachers in service.

— Advantages and disadvantages at various stages of teaching a foreign language to streamed, unstreamed, and linguistically homogeneous groups.

— The intellectual factors working for or against the learning of a foreign language.

Furthermore, and in accordance with the Ankara Symposium, the meeting stressed that a great deal of attention should be given to methods and techniques for establishing international standards as a basis for certification in modern languages and the possible issue of a "European language passport" with particular reference to migrant workers.
Some of the other decisions taken by participants concern :

— The co-production of films and television programmes for language teaching : The need for frequent correlation of efforts in this field is great. The Council of Europe might provide a forum for such correlation.

— The adaptation of audio-visual materials to the teaching situation in the various countries : Here too guiding criteria are lacking. Mr. G.L.M. Trim's paper on "The systems approach to language teaching" (Pont-à-Mousson, 1969) might provide a basis for such criteria.

It was suggested that a third Symposium should be held to conclude the series held in Ankara in 1966 and 1971 concentrating on

- The formulation of a methodology for the teaching of modern languages by radio and television within the school system ;
- The integration of such teaching by radio and television within the total learning situation ;
- The training of teacher trainers, and of teachers for such teaching.

Documents : CCC/EGT (72) 2 ; 11.

Turku
(Finland)

11th - 16th December 1972

The teaching and learning of the mother tongue and of other modern languages

(Symposium)

The main aims of the Symposium were to examine the general connections between the teaching and learning of the mother tongue and of other modern languages in mono-, bi- and multi-lingual communities in Europe and to consider the bearing of modern theoretical and applied linguistics on these problems.

Delegates from nineteen member States, observers from Finland, Yugoslavia and from the Secretariat for Nordic Cultural Co-operation (Copenhagen), attended the meeting at Turku. Participants in various working groups reached the following conclusions :

There is no evidence to suggest that it can be harmful for children to be educated bilingually — quite the contrary. Negative aspects formerly ascribed by some to early bilingualism, are attribuable to such non-linguistic factors as adverse social conditions, etc. In principle it is best to start learning a foreign language as early as possible, — either partly or completely parallel with the mother tongue.

As a rule it may be accepted that the child, who is a member of a linguistic minority, should receive instruction mainly in his mother tongue until he has reached a sufficient level of abstract language.

Problems connected with the education of the children of guest workers call for greatly increased research with a view to the elaboration of suitable teaching methods. As for migrant workers in general, it should be considered the duty of every country to provide the educational means to help such workers to solve the language problems arising from their particular situation, with due respect for their mother tongue.

Contact between linguists engaged in research and teachers is far from being sufficient. A course in general linguistics should form part of the initial training of mother-tongue teachers as well as that of teachers of other modern languages. It was particularly recommended that the latter should receive basic training in the linguistic analysis of their own native language.

Teachers should be capable of utilising in an eclectic way the various linguistic models available so as to help their pupils to become aware of the language they use. Schemes for the creation of new language teaching materials were considered to be urgently needed and should be officially encouraged.

The mother-tongue learning process cannot be repeated. The fact that the learner of a foreign language already possesses one language must be given due attention The mother tongue must not be looked upon as a mere source of interference, but rather as a valuable aid.

The aims of the individual and of the community must be kept in mind, and the degree of proficiency expected — with due regard to factors like situation, style, etc. — as well as to the age, social, cultural and linguistic background, learning capacity, and above all, the motivation of the learner. It is important that teaching take place in suitably sized homogeneous groups, in which the factors enumerated above can be taken into account.

Documents : DECS/EGT (72) 121 ; (73) 1.

Strasbourg *8th - 9th January 1973*

Technical and vocational education

(Meeting of the Co-ordinating Group)

The main aim of the Co-ordinating Group was to reach agreement on the proposals to be put to the CCC at its next session concerning the intensified co-operation project "Technical and vocational education for the 16-19 age group".

Three projects were considered to be suitable for intensified co-operation within this theme which, as a whole, was considered to be too wide and ramified to be treated as an intensified project. These projects are :

- The units/credits system in technical and vocational education ;
- The diversification of technical and vocational education ;
- Technical and vocational education for the 16-19 age group in the light of occupational mobility.

After discussion the Group agreed to select the last theme as the most suitable subject for an intensified co-operation project. It also recommended that if the intensified programme could not be implemented in 1974, the project could be retained as one of the Committee's ordinary activities.

The objectives of the project may be defined as follows :

— To analyse the various types of occupational mobility and ascertain what conditions are capable of fostering them ;

— To consider how and to what extent these conditions can be achieved through technical and vocational education ;

— To examine what implications the achievement of such conditions will have for the aims, structures and contents of technical and vocational education as well as for the assessment of pupils' performance, the forms of examinations and the training of teachers in that sector ;

— To study the problems that arise for technical and vocational education at the European level with regard to occupational mobility, and to find the most suitable solutions thereto ;

— To draft recommendations to European governments with a view to concerted action being taken in this field and to draw up proposals for other intensified co-operation projects as may seem necessary or desirable in the light of the studies carried out in connection with this first project.

Furthermore, the Group took note of the activities concerning technical and vocational education in the programmes for 1973 and 1974 of the Committee for General and Technical Education and discussed in particular the "Glossary of terms used in technical and vocational education in Europe". Finally, it made suggestions for the programme of the Committee for 1975/76 and subsequent years in this field.

Documents : CCC/EGT (72) 22 ; 116 ;
DECS/EGT (72) 101 ; (73) 7.

Strasbourg *10-11 January 1973*

Pre-school and primary education

(Meeting of the Co-ordinating Group)

During its autumn Session, the Committee for General and Technical Education selected "Pre-school education and its link with primary education" as one of the two themes for a programme of intensified co-operation to be undertaken by the CCC.

The first meeting of the Co-ordinating Group for Pre-school and Primary Education was attended by representatives from seven member States. Proposals by the co-ordinators, Miss B. Ulvhammar (Sweden), and Professor G. Mialaret (France), President of the World Organisation for Early Childhood Education were submitted to the meeting.

After a thorough examination of the main issues in pre-school education, the Co-ordinating Group recommended that the CCC should undertake a project of intensified co-operation on pre-school education for the children of migrant workers. The importance of this subject was specifically recognised in Resolution No. 3 of the 6th Conference of the European Ministers of Education, Resolution (70) 53 of the Committee of Ministers of the Council of Europe, and Recommendation No. A 4 of the Venice Symposium on "Pre-school education — aims, methods and problems", The aim of the Group's proposals would be to formulate recommendations on measures to be taken to facilitate and improve the integration of migrant workers' children into pre-school education. The working methods would include a study in three or four member States of the CCC of the various factors which influence the integration into pre-school education of the children of migrant workers. The Group expressed the hope that work on this project could begin in 1974.

The Group also made detailed proposals for two projects in pre-school education to be included in the normal programme of the Committee for General and Technical Education with effect from 1 January 1975.

These two proposals would deal with the provision of pre-school education for children living in sparsely populated areas and the link between pre-school and primary education. The former project would analyse the advantages and disadvantages of the two main types of solution envisaged in the provision of pre-school education in rural areas, i.e. that of bringing the children to the pre-school establishment (bussing) and that of bringing the pre-school establishment to the children (travelling teachers, mobile pre-school establishments, television etc.). The aim of the latter project would be to propose to the member States of the CCC a variety of solutions to the problem of how to ensure a smooth transition from pre-school to primary education. The working methods would include the

preparation of an inventory as well as an evaluation of the solutions adopted in member States.

During the meeting, Professor Mialaret introduced a memorandum proposing the creation, under Council of Europe auspices, of a European Centre for Pre-primary Education. The Centre would have both a teacher-training and a research function. The Group recommended that Professor Mialaret's proposal should be submitted to the CCC in the form of a special project.

Documents : DECS/EGT (72) 102 ; (73) 2.

Munich *18th - 24th January 1973*

The use of multi-media systems in school education

(Symposium)

"An attempt has been made in a number of countries to introduce multi-media systems in teaching at various levels, particularly in secondary schools. Serious difficulties have been encountered, even in the case of experimental schools and pilot centres, because of a lack of preparedness for these new systems in regard to staff, the production and distribution of media and software, evaluation methods, administrative regulations, financing arrangements, premises and technical facilities. Now that some countries are getting beyond the experimental stage or thinking of doing so, the time has come to *take stock of the implications of the introduction of multi-media systems* in the light of experience so far. It is, however, difficult to generalise, as some of these implications may vary greatly according, for instance, to whether a country's administrative structure is centralised or decentralised or how technologically advanced it is." With these introductory words to his talk given at the Symposium, Mr. R. Lefranc (France) aptly summed up the essence of the discussions at the Munich meeting. The Symposium, which was attended by delegates from nineteen member States and observers from various Länder, together with representatives of Bavarian Radio and Television, was inaugurated by Professor H. Maier, Bavarian Minister of Education.

The participants examined the implications of the introduction of multi-media systems into school education with special reference to specific cases. Discussion centred around three talks on : "Multi-media systems and the teacher" by M. Edmundson (United Kingdom), "Multi-media systems and the pupil" by R. Ekelund (Sweden), "The introduction of multi-media systems in schools : practical implications" by R. Lefranc (France), which introduced the various themes : media used as aids for the teacher, multi-media systems, multi-media systems working semi-directly, multi-media systems taking over the entire teaching function, and self-instruction systems.

The conclusions which emerged from the discussions may be broadly summarised as follows :

— The use of media calls for the collaboration of highly qualified teachers ; as such use increases, the teacher's role should change radically and he should become a stimulator of interest, an organiser and guide rather than a "dispenser of knowledge".

— Media are most effective when used in combination rather than in isolation, as they should interact upon one another ; they should be used, as far as possible, as part of a system, each of the media corresponding to a specific range of educational objectives, depending on the nature of the pupils.

— Initial and in-service training in the use of media are essential to obtain a favourable

attitude on the part of teachers and encourage them to use these new aids in their classes ; teachers should be familiarised with the possibilities afforded by new educational techniques and should have a hand in devising and producing these aids and also an opportunity of assessing them. In this way, the indifference or resistance of teachers to the media could be considerably reduced.

-- Teachers should be encouraged to use media creatively. Both they and those responsible for producing teaching aids should carry out numerous experiments on the use of media for large classes, small groups or individualised instruction, in a variety of teaching situations.

— The projection of a film, the viewing of a television broadcast, or any other audio-visual message in class should be followed by a series of questions and free discussion. In order to clarify ideas and make teaching effective, an exchange of impressions between teachers and pupils, among pupils themselves, and between classes, is essential.

— Any intensive use of multi-media systems and educational technology would be unthinkable without ensuring feedback and continuous assessment of the results, in the light of the aims pursued.

Assessment may be carried out in different ways : by duplex systems, multi-choice questionnaires, individual or group questionning ; teaching machines and programmed material provide further assessment possibilities. Teachers in traditional schools are not trained for such tasks and should be assisted by specialists (psychologists and sociologists), until they themselves become familiar with and initiated in these subjects.

— It is not enough for audio-visual material to be of good quality in order for it to be widely used ; it has also to be made easily accesssible. In many countries media are still stocked in centralised resource centres and for that reason are difficult to obtain. Regional centres must therefore be set up to provide an efficient and dynamic service for schools and urban communities.

— Frequently material is difficult to handle and deteriorates rapidly ; this discourages school users, however well-disposed. Furthermore, equipment is so heterogeneous that it is frequently impossible to use one type of software on another type of hardware. Standardisation of equipment is absolutely necessary, as is full and objective information for teachers on developments and on the possibilities afforded by new technologies.

— In many countries, an excessive amount of funds and equipment are given to "model schools" which conduct pilot experiments, though such experiments can rarely be extended to the school system as a whole, Instead of having these "model schools", which remain the exception, it would be more useful to conduct more realistic experiments, which would produce findings and solutions from whose application the entire school system could benefit.

— Although the need to introduce new technologies is universally recognised, their actual impact on education is still very slight. One of the major reasons for this is the high cost of the material, which limits the quality and quantity of production. Many countries also produce individually material which could be produced collectively.

If co-production, already begun under Council of Europe auspices, were practised on a greater scale, production costs could be considerably reduced and quality improved. This would lead gradually to the standardisation of curricula and equivalence of qualifications and, in the long term, would make for greater mobility of teachers and pupils throughout Europe.

Documents : DECS/EGT (72) 104 ; 113 ; 114 ;
CCC/EGT (73) 2.

Out-of-School Education

Rhône-Alpes-Auvergne	*8th - 12th January 1973*
Oxfordshire Birmingham	*29th January - 1st February 1973*
Coal-mining region in the Lorraine	*5th - 9th February 1973*
Open University	*5th - 9th February 1973*
Nordrhein-Westphalen	*12th - 16th March 1973*
Malmö	*2nd - 6th April 1973*

The Permanent Education Project — Evaluation of pilot experiments

In early 1973, experts from the Steering Group on Permanent Education have visited six selected pilot experiments in France, the Federal Republic of Germany, Sweden and the United Kingdom. These experiments cover every aspect of education from pre-school to adult education. On the basis of technical dossiers prepared after each visit, a consolidated report will be drawn up.

Background

Following the general debate on Permanent Education held by the CCC in 1966, the Council of Europe commissioned a number of subject- and case-studies on this theme from eminent European experts. Fifteen studies have been compiled and published in 1970 in the form of a compendium entitled "Permanent Education" (Strasbourg, 512 p.) as the Council of Europe's contribution to the United Nations' International Education Year. On the basis of these studies, a document has been prepared, after a series of meetings and round-tables, under the title of "Fundamentals of an Integrated Educational Policy" to guide the CCC when drawing up its future educational programme. This document endeavours to elaborate and define a common concept of permanent education ; it is intended for setting forth the principles which should serve as a working hypothesis for the co-ordinated assessment of pilot experiments which are currently developed in member countries.

In 1972, the CCC set up the Steering Group on Permanent Education, whose task is to select and then to study and evaluate pilot experiments in member countries against the common concept contained in the "Fundamentals". The creation of the Steering Group marks the end of the conceptual phase and the beginning of the operational phase in the CCC's work on permanent education.

Perspectives

The main objectives set for the operational phase, which will most probably continue for several years, are to draw conclusions from the findings in member countries for improving the common concept, and to generalise the principles of permanent education, thus contributing to their implementation in member countries. In this way the evaluation scheme is designed to introduce a two-way feedback whereby the common concept will

be improved in the light of experience, and the improved concept will inspire new experiments and innovations.

During the latter part of the operational phase, it is envisaged to organise a symposium which will bring together all interested bodies, governmental or non-governmental, to have an exchange of views on this phase and to put forward proposals for recommendations to governments.

It is satisfying to note that more and more new developments in permanent education are under way in member countries. Thus the Steering Group will have the possibility of studying and evaluating a great number of pilot experiments which will be proposed for examination by the governments of twenty-one CCC member States.

Strasbourg *23rd - 24th January 1973*

A European units/credits system for modern language learning by adults

(Meeting of experts)

At their meeting held in Strasbourg, experts from seven countries examined details concerning the full-time research on the operational specification of adult language learning objectives. They also dealt with the later stages of the research and development programme as well as with the results of the information collected on the development of the units/credits system.

The meeting agreed on the following purposes of the research to be carried out in 1973 by a full-time research worker :

— the preparation of a model for the operational specification of adult language learning objectives ;

— the exemplification of this model by detailed specification of the content of the threshold level of competence in English.

An interim report on the progress of work will be examined by the experts at their next meeting in April.

The further development of this project will take three main directions :

— The central issue would be the conversion of the operational specification of learning objectives into an outline learning system in consultation with the Steering Group on Educational Technology ; in particular, a detailed scheme would be developed for English at threshold level as an exemplification of the overall system. It is expected that the system will be extended later to other languages (e.g. French and German). Contacts would then be established with course designers in a range of European languages.

— A continuing programme for the collection and up-dating of information on adult foreign language use, needs and motivations, relevant to the development of the units/credits system.

— An enquiry into the structure and content of existing European modern language qualifications available to adults. This enquiry would serve as the basis for a taxonomy of learning objectives at different levels, and would be of assistance to member governments in establishing a system of equivalencies leading to the mutual recognition of qualifications.

In order to avoid the work of the Group being overtaken by developments in the field, it was considered necessary to pursue these three activities simultaneously.

As plans for media production must usually be established two or three years in advance, it is imperative to initiate contacts with agencies responsible for relevant pilot projects and with potential producers. It was stressed that otherwise, it would not be possible to maintain the proposed timetable.

Finally, it was agreed that types, objectives and methods of enquiry into foreign language use, needs and motivations should be discussed at the St. Wolfgang Symposium, to be held in Austria in June 1973.

Documents : CCC/EES (72) 60 ; 92 ; (73) 6.

Cultural Development

Strasbourg *14th - 15th December 1972*

Experimental study of the cultural development of European towns

(Study Group)

During the meeting of the Study Group the participants searched for means of strengthening the co-ordination of the various experiments and continued the examination of methodological problems posed by the project concerning the experimental study of the cultural development of some twelve European towns.

After discussion, the Group proposed a number of guiding principles, the most important of which are reproduced below :

Municipal authorities must try through this project explicity to formulate the aims of their central policy. The aim generally attributed to it is the democratisation of culture, interpreted as giving access to the cultural heritage. This concept seems in most cases however to involve a model of cultural life that might be described as the transmission of a *haute culture* from above.

On the other hand and according to the participants, all cultural policies must aim at having an "experienced culture". Contrary to the trend of disseminating a particular given cultural content, each individual must be encouraged, in his specific situation, to embark on the cultural activity of his choice. Instead of "consuming" culture, he must be helped to create it.

As things are now, the comparability of experiments will depend mainly on the general aims and the conceptual framework. But it is to be hoped that some specific points of comparison may already be identified before the Council of Europe project on development of towns is completed.

How far can the general aim of cultural policy be translated into aims expressed in quantitative terms ? It is important to answer this question.

Several international studies have shown that the systematic analysis of "needs" as expressed by the population reveal themselves to be relative and highly ambiguous. Muni-

cipal authorities should guard against basing their cultural policy exclusively on the analysis of such "needs". It is difficult, for example, to make justifiable distinctions between the needs asserted by sociological analysis, those expressed by a given population and the potential needs to be aroused by group leaders. There are also needs which cannot be foreseen in the medium-term. Nor can it be denied that the detection of latent needs may very often be a slogan launched by some specific political group.

A range of minimum needs to be met is perhaps the ideal solution. But such a choice and attitude mean referring to some system of values or other.

As for the financial analysis, the economics of culture are not confined to cultural expenditure. Financial flows connected with cultural activities are another important aspect, their analysis however raises problems of methodology which have by no means been solved. The Group therefore considers it too early to contemplate undertaking such a study within the project.

On the other hand, it would be very interesting to have country studies on local authorities' cultural expenditure, in particular on existing cultural facilities.

The scientific teams should concern themselves not so much with the study of cultural needs or the motivation of behaviour — which in any event may produce random results — but rather with the impact of cultural action on the different categories of persons concerned and an analysis of their reactions.

In this respect, it is important to check and to see that all sections of the population are covered by the project and that the quality and quantity of cultural communication within these groups is gauged. The target populations may very well consist of under-privileged groups with a cultural potential that needs promoting if the population as a whole is to advance. This problem involves great difficulties, however (lack of schooling, economic conditioning) and would require substantial financial resources.

One of the worst-treated of the under-privileged social groups is that of the migrant workers. The need to study their problems was again strongly emphasised.

The cultural attraction of towns raises two problems : the need to take into account cultural activities primarily for tourists and the participation in urban cultural activities of the rural population within the town's zone of influence. The treatment of these problems would require the construction of analytical tools different from those being developed to study generally urban populations.

Documents : CCC/EES (72) 56 ; 108 ; 129 ; 138.

Paris *19th - 21st December 1972*

Research into youth problems

(Study Group)

The discussions of this meeting were concentrated mainly on a report by H. Kreutz (Austria) on "Youth and social change — A methodological review of European youth : 1969/1970" which summarises progress to date in theory and the various research methods used in sociology of youth. Drawing his facts from about 150 selected works, the author discusses the present conditions and limits of sociological research into European youth. In view of the variety of approaches possible and the wide range of facets which the matter presents he only goes so far as to seek general trends and analyse the behaviour of young people and their position and role in society. In his view, a scientific theory of youth might well be an impossibility.

After discussion of the report, the Study Group agreed that the survey should also extend to changes which took place in the last ten years in the political situation as well as in research bodies. Although it was recognised that the review had made a valuable sociological contribution to research into youth problems, it was felt that a more multidisciplinary approach was needed. Reference must be made to other branches of humanities, such as psychology, ethnology, history of civilisations and the educational sciences, to supplement this initial survey.

According to the participants, the report does not deal with a number of matters, e.g., the rural youth, the difficulties of fitting young people into society, juvenile delinquency and its prevention, young people's attitudes to political parties, patriotism as a system of values, problems arising in relation between different cultural groups. Although the group considered these questions to be of major importance, none of them had been raised by the author.

Some of the above aspects, as well as the relations between the various sectors and disciplines, of youth research are to be discussed at the Symposium on "Youth policies and research — Possibilities, limits and conditions", to be held at Baden (Austria) in September 1973.

With a view to examining relations between research and youth policies in greater depth, research workers from a number of different fields of study — especially sociology, psychology and the educational sciences — are to discuss at this Symposium matters connected with the participation and status of young people, and their acquisition of a sense of values and a political and social conscience, with officials from youth departments.

Document : CCC/DC (73) 14.

Educational Documentation and Research

Luxembourg	*19th - 20th September 1972*
Paris	*31st January - 2nd February 1973*
	(Working Party on the EUDISED thesaurus)
Strasbourg	*11th - 12th July 1972*
Paris	*16th - 17th November 1972*
	(Working Party on the EUDISED format)

The EUDISED Project in 1973

Since April 1972, when the Educational Documentation and Information Committee approved in principle the EUDISED Report 1971 and set up two working parties for the Implementation of the Report's recommendations (cf. *Information Bulletin* 2/72), the EUDISED project has made steady progress.

The Working Party on the *EUDISED thesaurus* has so far met twice, in Luxembourg at the Information and Documentation Centre of the European Communities, and in Paris at the Maison des Sciences de l'Homme. The Working Party under the chairmanship of K. Spangenberg, Berlin, is composed of experts nominated by France, the Federal Republic of Germany, the Holy See, Italy, the Netherlands, the Scandinavian States, Spain and the United Kingdom, and has been attended by observers from UNESCO/IBE and the Com-

mission of the European Communities. At the Paris meeting the first print-outs produced by the computer of the International Labour Office, and containing the provisional lists of English, French and German descriptors for indexing educational material, were discussed. The lists comprise some 2,500 descriptors in each language, which are at present arranged in KWOC and in alphabetical order. The descriptors had been compiled by national groups on the basis of existing indexing systems and had been completed by the Project Director, J. Viet, Paris, who for this purpose compared them with the OECD Macrothesaurus on economic and social development, and with the American ERIC thesaurus. The equivalents for the German descriptors had been prepared by the Council of Europe's translation service.

At the Paris meeting the Working Party discussed in particular those groups of descriptors which had occasioned compilation difficulties and agreed upon a number of principles for the continuation of the work :

— National terms should not as a rule be included in the EUDISED thesaurus which should as far as possible only use generic terms.

— For subject-field terms, of which some 4,000 are used in higher education and research alone, it was decided that the thesaurus should contain all terms identifying school subjects and, for higher education, only terms characterising broad areas of knowledge and technology. Furthermore, the thesaurus should include the terms directly linked to the staff of educational institutions and the main terms related to the field of documentation.

— There should be a minimum of pre-coordination, but this principle should be applied flexibly as some languages, in particular the German language, prefer pre-coordinated descriptors.

— The 18 facets proposed in the study of D. G. Foskett, London, should be used for compiling the facetted lists of descriptors.

On the basis of these agreements J. Viet will finalise the lists of descriptors in English, French and German and begin work on the facetted lists. The second print-outs of the thesaurus will be discussed by the English, French and German members of the Working Party in May and the third print-outs by all members in October 1973. It is hoped that work can be completed shortly after the October meeting so that the EUDISED thesaurus in English, French and German can be submitted to the Educational Documentation and Information Committee by the end of the year.

The Working Party also took note of the fact that provision has been made for the preparation, in 1974, of thesauri in Spanish, Italian and possibly Dutch and of their English and French equivalents. First contacts have been established with the Spanish experts who will be preparing the provisional lists of educational descriptors in Spanish.

The second Working Party is concerned with the elaboration of the *EUDISED format* The Working Party under the chairmanship of R. E. Coward, London, is composed of experts nominated by Austria, France, the Federal Republic of Germany, the Scandinavian States and the United Kingdom, and has been attended by observers from the Commission of the European Communities and the International Organisation for Standardization. At the first meeting at Strasbourg it was decided that the EUDISED format should cover both book and non-book material, as audio-visual media are acquiring an ever increasing importance in education. The format should allow for the effective interchange of bibliographical information on magnetic tape within a network in which various computers are used. The Working Party therefore accepted the ISO standard for interchange (ISO/DIS 2709). It furthermore recommended that the EUDISED format should be developed in the framework of MARC II, elaborated jointly by the U.S. Library of Commerce and the British National Bibliography, and accepted by most continental libraries.

On this basis J. E. Linford, the Acting Head of Research and Development of the British

National Bibliography, prepared the first draft of the EUDISED format. It was discussed point by point and accepted in principle at the Working Party's second meeting in Paris. It was decided that a revision of the draft incorporating a few immediate amendments should be distributed to a number of experts for further comments. These comments will be taken into consideration by J. E. Linford when preparing the second draft for discussion at the next meeting scheduled for late April 1973. It is hoped that the EUDISED format, together with a manual on its application, can be submitted to the Educational Documentation and Information Committee by the end of 1973.

These two instruments, the EUDISED thesaurus and the EUDISED format, are intended to provide the basic software for the exchange of computer-based information on educational material in Europe.

Documents : DECS/Doc (72) 12, (73) 2 ;
DECS/Doc (72) 8 ; 18.

Second Part

THE EDUCATION OF THE 16-19 AGE GROUP

Educational Research Symposium, Sèvres, 2-6 October 1972

In line with the main theme chosen for the Eighth Conference of European Ministers of Education — The education of the 16-19 age group — the CCC programme lays considerable stress on the various aspects of this subject.

The research Symposium on the education of this age group, organised at Sèvres last October by the French authorities, under the auspices of the Council of Europe, primarily set out to draw an overall picture of the state of research in this field and establish what difficulties teaching and guidance in upper secondary education presented for researchers and administrators. The participants, who were researchers and officials from the Ministries of Education of eighteen member States, tried to answer the various questions involved and to clarify ways in which school reforms might contribute to finding a solution.

Professors H. Janne, F. Edding and S. Henrysson presented studies on the sociological, economic and psychological aspects of this level of education. Professor J. Wrigley discussed curriculum planning while Mr. L. Géminard dealt with new developments in technical education. The working parties used these papers as the starting-point for detailed discussion. At the end of the Symposium, Mr. L. Legrand summarised its results.

The full texts of the Symposium papers are given below.

Education of the 16-19 age group - Sociological aspects

by Professor H. JANNE,
Université Libre, Brussels.

Sociological significance of this period of life

This would be easier to determine if the 16-19 age group had a scientifically well-defined psychological identity. In the present stage of genetic psychology (1), as of differential psychology (2), we still have very little scientific knowledge of this phase of human development. In particular, the intellectual characteristics have not been identified as such.

But sociology can try to discern the social realities which correlate to this age group.

The age group has been defined sociologically in terms of function at the individual's level in our society. At this age, a young person is initiated into membership of society as a whole, and into

(1) See J. Piaget's findings, in particular his reservations, in "L'évolution intellectuelle entre l'adolescence et l'âge adulte", in *Foneme*, Milan, May 1970.

(2) Reuchlin, M.: *La psychologie différentielle*. Paris, (PUF), 1969.

the functions which his membership involves. These functions require certain relational attitudes and forms of behaviour, a specific body of knowledge and a mastery of material and social techniques. For this purpose human societies have socio-psychological mechanisms designed to turn "adolescents" into "adults". These mechanisms are assimilation processes dependent on well-defined institutions.

In Western civilisation, initiation takes place through the traditional institutions of :

— the family *(through upbringing)*,

— the school *(through teaching)*,

— the group of young people of about the same age — the peer group — *(through recreation and "play")* (3).

Efficiency, coherence, adequacy to reality and a defined degree, sufficient but not excessive, of independence are lacking in these three institutions, and society itself is incapable of professing confidently its essential values.

It is *in* and *through* the 16-19 age group that these phenomena are most apparent. Does this mean that the short-comings in question are always deep and ever present, that there are no attempts (successful or otherwise) to overcome them and that the situation is irremediable ? Certainly not.

The factors of the crisis among the 16-19 age group

These factors must be analysed as they occur in the three institutions mentioned above.

The family

The family is now no more than the couple and its minor children : relations with ascendants and collaterals have become attenuated, hardly ever depending on a common home. But the tradition of paternal authority is still alive in our law and our customs. The position of children is still in principle one of subordination ; and although this is less marked than it used to be in the family's internal relations, materially it is much more real than in the past, when young people were economically less dependent on their father, having shared in his work since childhood.

The family as a couple, termed "nuclear" in family sociology, has lost many of the functions of the patriarchal or semi-patriarchal family and even of the larger families of previous generations.

For example, the effect of our current way of life, our smaller dwellings and the spread of old-age pensions and institutions for old people is that families no longer have their retired parents living with them. Similarly, teaching is confined to the school, and part of young peoples' leisure time is spent watching television, which both supplants the parents' function as suppliers of information and reduces its value. As for upbringing, the family's basic function, it is becoming less and less coherent and continuous. The parents go out to work and the children to study ; both go out to amuse themselves ; and the parents' attention is directed elsewhere (not least to the television). Education is handed over to the school, which is overcrowded and overloaded with problems. So in fact the peer group is exerting an increasing influence, and this influence meets a need.

In present-day urban society, dominated by the tertiary sector, by industry and offices, fathers (and more and more mothers) work outside the home, and more children continue their studies longer : thus a great proportion of young people are completely cut off from working life. Factories, offices and retail trade are distant and mysterious concepts. Of course young people receive some information, but there is no experience, no actual contact. Work remains to them a thing apart throughout their studies, which, either by legal compulsion or by the family's own choice, have been prolonged to sixteen and increasingly even further. Can we be surprised that the prospect of entering the unknown and therefore fearsome working world provokes distaste and anxiety among young people ? What is more, involuntarily the family educates young people only in the negative aspects of work : the parents worry about their own work, and they anxiously harass their children to succeed in a career and prepare themselves thoroughly for this at school. But the young know perfectly well that the experience they gain at school is quite different from experience at work, and since everyone feels that the need for vocational training is increasing in step with technical demands, the usefulness of school is called into question.

Young people are less fitted for work than for consumption, to which they are conditioned by tempting offers. Their independence — more apparent than real — in the "closed world" of their leisure time, will bring a reaction to the rationality of the large modern organisations, in which they will work under bureaucratic supervision, of "wild" intransigence or of apathy inspired by a feeling of impotence.

Although the increasing number of children who

(3) It should be noted, however, that each of the three institutions assumes tasks concerning education, instruction and the organisation of recreation. Here emphasis is placed on their principal role.

prolong their studies are economically totally dependent on their families, the general rise in the standard of living has led to parents giving them, with increasing regularity, ever larger sums of "pocket money" (4).

Young people, especially those aged between 15 and 19, have been turned into economically important consumers. As long ago as 1959 the 15-25 age group in England spent £ 830 million on their own account. Producers and distributors have naturally sought to exploit this potential. They have done so by creating fashions in clothes, hair styles, music, places of recreation and clubs, films, drinks, weekly and monthly periodicals, vehicles for sporting purposes and for getting about, and so on, designed solely, or at least primarily, for young people (5). In this way they have helped to create a specific life-style and encouraged the birth of a *sub-culture* for young people. The effect has been to strengthen the peer groups — which are especially important at the age of 16-19, after which they tend to break up (6) — and make young people spend their free time *together, away from their families and adult society*. In this way the family's influence with regard to the important point of the use of free time is virtually annihilated, and the influence of the "peer groups" is increased : that is where one has to make a good impression and succeed, that is where "models" for living, made fashionable by the "star" cult, are to be found. Life there has a flavour found neither in the family nor in the school ; it appears to offer freedom from dependence on these.

The sub-culture of the young and its particular milieu poses the sex problem in new terms at an age when it is particularly acute, being related to the human being's search for his own individuality. The family and the school no longer offer the security they did.

What is more, parents are victims of a conflict between their standards and the facts of modern life : between the "free world" and the régimes actually allied in it, between "democracy" and its manipulation by "combines", between equality on the one hand and poverty and blatant discrimination on the other, between solidarity and the value of competition, between the duty to assert oneself and be sincere and the need to be careful, to conform, between broadmindedness in sex matters and the fact of taboos, between civic solidarity and tax evasion, between Christian morality and self-centredness and indifference to others. In our changing society contradictions are rife, whereas successful upbringing must be based on certainties. The family is losing its power to educate and its function as a grounding for what is taught at school. It is mainly this "lack of genuinenesss" that disturbs young people.

(4) The striking reduction in child mortality, the increasing efficiency of medicine, better living conditions and the much smaller number of births for each couple have caused children to be more highly valued. Losing a child has become a disaster, whereas in traditional societies every couple could *expect* to lose several. This has increased the attachment of parents to their children, so that they find it difficult to refuse what the children say they need to make them happy. Being both dependent and highly valued, children have acquired a growing freedom, which is nonetheless constantly questioned and hounded by the anxieties of their parents. This perpetual debate extends to pocket money.

(5) This has also been the basis of the growth in the underground drug trade.

(6) Through the combined effects of marriage, career, and children.

School

The three working parties at the remarkable Symposium held at Pont-à-Mousson, France, in January 1972, on "Factors in primary and secondary education which determine the effectiveness of further education in later life", drew attention (7) to the following points which are particularly relevant to secondary education.

"A particular type of school was blamed for most of the difficulties encountered in further education. Establishments of this kind were seen, experienced and founded as :

— places cut off from life and the environment ;

— silent places, stifling any inclination for personal expression and hostile to communication between persons ;

— discriminatory places, favouring the "noble" branches of learning ;

— places characterised by conformism, reproducing traditional patterns and values and opposed to creativity and any expression of dissenting opinion ;

— irresponsible places, excluding any form of co-operative control over common resources ;

— places demanding passivity and submission, where pupils had no say as regards the subject-matter, methods, duration or organisation of studies ;

— lastly, places associated with repeated failure at the end of a guidance process invariably amounting to rejection.

(7) See Council of Europe, doc. CCC/EGT (72) 1, 4 April 1972, roneoed document, p. 35.

At the other extreme the aims of the school, at all stages, were defined as follows : to produce independent and responsible human beings who would be creative and responsive to social life".

Then there are examinations, which are in reality not just a method of assessment or selection based on the results of education, but have become instead its essential aim and the determinant of pupils' attitudes and behaviour.

The French-speaking Working Party at the Symposium drew attention to what it called "psychological resistances engendered by school". Here we may note the following remark : "Many children leave school as early as possible because they are dissatisfied".

Among the "resistances" the Working Party considered :

— lack of respect for the pupil's personality,
— disregard for his pace of development,
— inadequate opportunity for expression and communication.
— repeated failure,
— accentuation of handicaps as studies continue,
— invidious distinctions between general sections and technological or vocational sections,
— selection by rejection,
— insufficient contact with everyday life,
— lack of community spirit (participation) at school.

All these characteristics of the educational system, some of which are more real and pronounced than others, are aggravated by the fact that informal education, the acquisition of information and culture outside school, has constantly grown, giving young people the *impression* that they are learning for themselves, independently of the school, and gaining maturity. This detracts in their eyes from school activities ; the school appears to be a closed circle, shut off from social and technical reality and not helping them to live in the present.

Peer groups

The reduction in the functions of the family and school, combined with the creation for commercial purposes of a specific young peoples' leisure time milieu, entry to which may be said to take place at the age of 15-16, has increased the strength of the peer groups, which crystalise and gain significance in this sub-culture producing environment.

It is here that young people want to and can express themselves. They are very sensitive to the appreciation of their crowd and subject to its powerful drive towards conformity. *This milieu is an "educational" reality which is one factor that must be taken into consideration in any educational and cultural policy.* Here are forged, or transformed, the values which exert such an effective influence on the attitudes and conduct of young people. This is the source of their questionings and demands, particularly with regard to the school and the family.

Any reform of the educational system that relies only on "school" data is likely to treat symptoms instead of the disease itself, which is to be sought in the directions outlined, albeit vaguely, above.

Quantitative aspects of the education of the 16-19 age group

The increase in the number of upper secondary school pupils is a fundamental sociological feature of the expansion of the educational system in the industrialised countries. It is encouraged by the tendency to lengthen compulsory education, partly to prepare 15 and 16 year olds for starting work, but subsequent demand is of course the immediate cause, and the facilities and assistance offered for study also promote growth. This expansion decreases for each year between the ages of 15/16 and 18/19, but the overall effect of growth in this area is to increase pressure to enter higher education.

The large numbers now going in for "post-compulsory" education and their increasingly *varied social and cultural background* (8) are the principal sociological factors in the recurrent crisis of adaptation facing upper secondary education. Such education used to be mainly for a *restricted,* economically and culturally *homogeneous,* social group whose young people were to be trained to form the "upper classes", with a bias towards the liberal professions, top managerial jobs in the economy and positions of leadership in the civil service and politics. Since the last war both the aims and the distinctive features of the school population have radically changed, although step by step training for the positions of leaders remains a necessary function of any educational system, whether it is due on the basis of maintained privileges or selection on merit ; both these factors are present in differing degrees in the present ambiguous situation.

(8) Not to mention their varying ability, to master present types of school activity.

At this level, the phenomena in question intersect with even quicker growth in the entry of girls to upper secondary education. In fact, the very status of women in society is at issue : the traditional "image" of the woman as the "genetrix", the person in charge of the daily life of the home, the one who brings up the children, a "sex object" or the "husband's helpmate" is changing radically, while the sociological weight of the past continues to exert a considerable influence. The status of women is therefore ambiguous, and training between the ages of 16 and 19 bears the stamp of this. Education undoubtedly plays an emancipating role here, but it also confuses the issue, for the whole organisation of the social system obstructs — latently rather than explicitly — any practical application of true equality between the sexes, even though this is generally accepted in principle. This resistance is expressed in the way most girls are guided towards studies with limited economic rewards and in the restrictions on their school progress (cf. the overall percentage at university level). What is more, girls seem ready in general to accept this state of affairs, which both reflects their traditional dependence and marks an obvious improvement in their status.

In Belgium, Denmark, France, Norway, the Netherlands and Sweden, 60 %—80 % of the age group — boys and girls — attend school ; in Austria and Yugoslavia the percentage is 40 %—60 % ; in other countries it is under 40 %. Canada, Japan and the United States exceed 80 %.

These facts prompt the question how young people are distributed among the various channels open to them under the educational system and how many of them receive *no training* after their compulsory education.

As the figures and percentages supplied in the national reports were not prepared on comparative bases, and since school categories are defined differently and assessed at different dates in the various countries, we can do no more than outline an "impression" which, despite its inevitable mistakes (for which we crave indulgence), affords an overall view and reveals a rough similarity in the position in several industrialised countries. The differences are probably due mainly to the specific characteristics of vocational and technical training — the degree to which it is "school-centred", closer to "apprenticeship" or more comparable to "extended" general secondary education.

Taking the education defined as "extended" in the reports, we obtain the following percentages :

— 5.2 % for Spain (more recent industrialisation and aims therefore traditional ; a re-organisation and expansion of education has just been decided) ;

— 9.51 % for Austria (but over 60 % of the age group received technical and commercial education at very varied levels and of very varied kinds) ;

— 18 % for Switzerland ;

— 19.4 % for the United Kingdom ;

— 20 % for Denmark, to which must be added the schools which prepare for the "higher preparatory examination " ; 20 % for Belgium ;

— 30 % for Sweden and Finland ;

— 32 % for Norway.

What is interesting is the percentage of this age group, which is either stated or can be deduced by subtraction, who have *no* training at all after compulsory education. We find the following situation :

Sweden	over 10 %
Switzerland	22 %
Austria	23 %
Denmark	23 %
Finland	25 %
Norway	25 %
Belgium	29 % in 1966-67
	33 % in 1970-71
United Kingdom	40 %
Spain	75 %

The available data show that in the most highly industrialised countries vocational, technical and commercial education (with different and more or less extensive systems of "apprenticeship" and general education), is received by some 40 %-60 % of the 16-19 age group (18 % in Spain).

Equality of opportunity

Let us take a look at the technically most important meeting on educational problems in recent years, the *Conference on Policies for Educational Growth*, held at the OECD, Paris, in June 1970. In the general report (*Educational Policies for the 1970s*) ([9]) we find the following ([10]) :

— "As could be expected, all social groups (whatever their definition) have benefited from the general increase in overall educational opportunity".

(9) OECD, Paris, 1971, 157 pages.

(10) See Emmerij, L. (OECD Secretariat) : *Goals and targets of educational policy* — Discussion paper No. 1. Part III - Increased stress on equal opportunity, pp. 61-63.

— Yet "for most countries social disparities have not changed substantially during the past twenty years".

— While *access* to the different schools and levels of education is at present open to virtually everyone, scholastic success appears to be closely related to the family and social environment. Whereas discrimination formerly operated in the matter of entry, it is now most marked in relation to results. The final result is that there is little change in the social distribution of those receiving higher education.

— At the same time, even the ability to complete one's education does not ensure *equal occupational opportunity*, which is also related to the family and social background. Furthermore, according to Background Report No. 11 to the Conference, "there is no conclusive evidence that the observed increase in educational opportunities have (sic) had a marked impact on income distribution".

The Paris Conference shows that structural progress is very relative : the only advance — and it is not a negligible one — is that *every* social category (while hardly increasing its percentage participation at the various levels) has a larger number of young people at all levels of education beyond the compulsory period. As the report points out, it is the same phenomenon as with distribution of income : everyone is earning more (income per head is increasing) but the difference between social groups stays much the same (income distribution shows little change). There is an apparent paradox here : "plus ça change, plus c'est la même chose".

In all social classes there has been an increase in the participation rates per thousand of the working population aged between 45 and 54, but the progress made by the lower class is distinctly less than that by the higher class. For example in France the number of students per thousand of the working population from the same socio-economic category rose from 338 in 1959 to 629 in 1964 for the higher class and from 7 to 27 for the lower class. Thus it appears that even if the disparities seem to have become less marked in relative terms, they have increased in absolute terms ([11]).

After the Second World War, educational policies sought to introduce equality of opportunity by doing away with obstacles which prevented access to the various levels of education after compulsory schooling. Entrance examinations, at various levels, have been abolished almost everywhere ; free education, grants and various forms of material aid have certainly achieved important results by largely eliminating the financial factor. But it rapidly became clear that discrimination occurred, when the compulsory choices had to be made at the beginning of the secondary stage, through decisions which were practically irreversible : adolescents entered watertight "streams" whose outlets were very unequal in value (the university, higher non-university education, a secondary technical diploma, a diploma for "short" vocational education etc.). Failure in the extended general education stream (leading to the university) generally made it impossible for a pupil to transfer in a satisfactory manner to other "streams", without considerably increasing the length of his studies... Logically enough the policy subsequently pursued was to reform the structures of secondary education so as to defer the irreversible choices until abilities and motivations had been more firmly established (in principle at the age of 15-16 instead of 11-12). To this end, reforms established ever wider "common cores", extended general training in technical and vocational "streams" and, at the end of the process, introduced technical training into extended general secondary education and brought about progressive diversification over the whole range, together with a greater number of choices. These reforms were naturally enough to lead to the "comprehensive school", a solution which has now acquired more or less developed forms in almost all countries, particularly in Sweden. Attempts were made to remedy the unequal value of streams in the upper secondary level by doing away with or at least reducing discrimination on access to higher education ; the trend is to achieve *equal recognition* for diplomas awarded on completion of upper secondary education.

But because of the ever-increasing number of young people from culturally less privileged circles who were affected, it became apparent, even while the reform was being implemented, that inequa-

(11) According to the OECD report published before the Paris Conference. This shows the misleading nature of growth indices for individual social categories : it could be said that for France that index is 2 for the higher class and 4 for the lower class ! Whilst in fact over a period of 5 years, there were 291 more students for the higher class per thousand of the working population and only 20 more for the lower class ! However, taken in absolute figures, the latter have a better proportion than that given by the coefficient of 27 to 629 (about 23!) in the total population receiving higher education because of the percentages of their social category in the working population. This shows the ambiguity : the fact remains, that proportionally, the higher class has derived greater benefit from the democratisation of studies than the lower class.

lities of *access* and *courses* were being replaced by inequality in education achievements. This became a major factor of discrimination in education. Henceforth inequality would show itself in the number of those abandoning their courses and in the trend, based on examination results, towards *streams which were increasingly less favourable as regards vocational outlets.* This situation brought home the fact that what had till then been regarded as the supreme aim, namely equality of opportunity, might, in the last resort, — after, and indeed because economic, social and cultural factors had been largely neutralised — lead at best to competition of a liberal type (in harmony with the market economy) between individual abilities. In other words, the policy of democratisation was bound to lead in fact to *selection on merits.* Yet this is more or less consciously rejected as an aim in life by most young people. That is one of the causes of student unrest. A system of individual competition based on bourgeois culture and accepted by young people from similar social backgrounds and selected as from their entry into secondary school, is quite normally rejected by a school population which is increasingly heterogeneous, less élitist and which, moreover, is not prepared for this aim in the family.

All this explains why the democratic aim of equality of opportunity was accepted without any considerable opposition by the authorities.

The result is that today a turning point has been reached : *equality of opportunity* — now seen for its unattainable self — is being replaced by the idea of *the right of every young person to acquire through education the optimum development possible with his personal abilities directed by his aspirations* ([12]).

Inequality of the sexes in education did not at first give rise to any special political measures. However, measures to democratise education were taken both for boys and girls. In recent years, however, there has been a tendency to give girls access in principle to all forms of education and all educational institutions. "Co-education" in upper secondary education is now the general pattern almost everywhere. Recently — and this is symbolic — France allowed women into the Ecole Polytechnique, still characterised however by its military origins.

In the provinces the effort made has been essentially one of providing facilities and it has been stimulated everywhere by the trend towards regionalism, federalism and decentralisation which is affecting all Europe. Important examples of this are to be found in France, Italy and Belgium ([13]).

The problems of educating the 16-19 age group

Our investigations have not produced solutions but subjects for discussion :

— *The school and the family must be organically associated* with education and teaching : consequently consideration must be given to the setting-up and activity of "school committees" with a number of powers and methods at their disposal. Here the fundamental principle of *coherence* in education comes into play.

— *The school must no longer be "divorced" from working life* ; thought should be given to solutions promoting alternating periods of study and work (the British sandwich courses and the apprenticeship systems which are defined in their different forms in almost all European countries can provide inspiration and basic experience in this matter). Young people must be brought into contact with social reality and concrete responsibilities. At the same time education itself should include the social sciences in its curriculum, since they can help the young person to become aware of what he *is* and what he *is doing,* particularly in his work.

— *Counselling and guidance* must be integrated into training, in order to ensure that every young person can construct his own "identity" and be found work which best suits his skills and aspirations. Young people must be helped to overcome their disquiet (in some cases their anguish) as regards themselves and society.

— As well as including the concept of "working life" in training, the school should take inspiration and active example from the domain of *non-formal education,* and in turn, it should endeavour to promote and influence this domain instead of ignoring and condemning it (the function of the peer group). It is not a question of "retrieving" the sub-culture of young people but enabling it to flourish and develop positively with the help of the human and material resources of formal education. To that end it is essential to train young people in *communications, expression* and *information* (a critical

(12) Here we must look to the individualisation of teaching and assessment, to effective integration of guidance and counselling on the one hand and the training process conceived as *assisted self-training* on the other, to the opening up of the school to the educational « resources » of the outside world.

(13) In this respect "the educational and cultural district" proposed by B. Schwartz seems to offer, more especially in this case but also in general, an effective framework for a planned response to social demand, in face of the needs of society.

approach to the giving and receiving of information).

— In view of what has been said above, *the school should no longer be the only "place" for education* : it must be conceived of as being "open" and its "groups" (see below) could be set up wherever education "resources" are to be found (see Bertrand Schwartz).

— All this means that serious thought should be given to the idea that the training of young people between the ages of 16 and 19 should no longer be regarded as the last stage of school but as the *first stage of permanent education* ; and here we find the principles of assisted self-training and the exercise of responsibility ;

— This "deschooling" implies *the end of the classroom system* after the age of 15 or 16. That means that "classes" would gradually be replaced by groups set up not according to the criterion of age and a successful examination in the previous year in all the subjects of the curriculum, but according to skills and a well-defined *aim* in each case. The new system presupposes the accumulation (having regard however, to "common cores") of "credits" corresponding to each of the "units" of studies around which curricula must be organised (here we should follow B. Schwartz's "units" system).

— *The school "without classrooms"* must become a satisfactory way of life in itself for the 16-19 age group. The reality of social life in the school must take the form of responsibilities for management and upkeep. Institutions of upper secondary level, whilst combining the various aspects of this educational stage (general, technical, vocational, artistic), should form independent units, because the young people in that group wish to be regarded as adults and not to be lumped in with children. This point of view would be strengthened if the beginning of the upper secondary stage appeared as a *complete break* and thereafter were regarded as the first stage of permanent education.

— In view of the duration and age limits, both higher and lower, of compulsory schooling in the various European States, the problem of its extension differs from one country to another. Countries where compulsory schooling is shorter or begins and ends at ages differing from those normally in force could consider coming into line. But the operation in itself does not seem to be vitally important since reality is conditioned by the intensity of desire for education. If a country opted for extension, it would have to consider whether this should be done *at the base (pre-school)* or *at the summit* (towards *upper secondary level*). But in the present context, the question is whether this measure deserves the priority given to it in the recent past as opposed to a policy of developing a wide range of educational facilities to be freely chosen, at pre-school level, upper secondary level, or above all at the level of adult education in the context of permanent education. Moreover, there are good reasons for considering the desirability of extending compulsory schooling progressively up to the age of 18, but *restricted to a minimum part-time scheme*. The result would be that the apprenticeship arrangement of the working hours of those entering an occupation would have to make it possible to implement this legal provision effectively. All schemes for part-time education would clearly have to take that aspect into account. It should be added that if full-time upper secondary education included actual work courses in firms or public services, a move would indeed be made, although of necessity in stages, towards a type of education *based on "studies" on the one hand and "work" on the other*. And, as has been seen, in the case of those actually studying, one of the most disastrous aspects of the way of life of young people between the ages of 16 and 19 — and this is particularly true of the extended general levels — is their isolation from actual "working life" (information does little to remedy this). Furthermore, alternating periods of studies and work would be a factor making for a better understanding between generations and real knowledge of economic and social life on the part of those who will eventually enter higher education.

Conclusion

Our sociological analyses of the educational problems of the 16-19 age group have not yielded solutions, still less a carefully thought-out political plan. That was not our task. The problem as it stands, is extremely vast and complex. It calls into question the *structures, contents and methods of upper secondary education*. We are not concerned with that. Our task here is to pinpoint all the implications which arise from actual reality. To ignore them would doubtless simplify the task of discussing and deciding on a policy. But, in that case, that policy would be no more than an extension of the one being pursued at present, and to a certain extent, treating only the symptoms, and putting out of mind the real nature of the disease. That would amount to facing up to the demands and problems of the moment which conceal far deeper needs and movements.

Psychological aspects of the education of the 16-19 age group

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My topic is a very large one, and I can only cover some aspects. They are as follows :

— Physical and psychological development during adolescence particularly the late adolescent period ;

— Emotional and social adjustment during this period ;

— The so-called "adolescent culture" — its meaning and existence ;

— Factors that influence success in higher studies and in one's career.

Physical and psychological development

There are two main schools of thought about the psychology of adolescent development and its complications. The first and more traditional one stresses that the development follows a rather fixed pattern inherited in the human constitution. The obvious physical changes have their psychological correlates, for example instability, agression, inferiority feeling etc. The other school stresses adolescence as a social process — a change-over from the child role to the adult role. In modern western culture this tends to lead to tensions and conflicts, because the role of the child and that of the adult differ. In other less complicated cultures, for example on islands in the Pacific as described by Margaret Mead (1935) and others, this is avoided. There is no sharp division between child and adult roles, and adjustment is simple and gradual. However, for both schools physical development is an important background for a full understanding of the psychological aspects.

There are large variations in the advent of puberty but on the average, menarche occurs at the age of 13 years together with the development of secondary sex characteristics. Boys have a slower development. The first important sign of sexual development, ejaculation, generally occurs between the ages of 14 and 15 years. The environment, however, exerts an influence on maturation. Children of higher socio-economic groups tend to develop earlier and the age of puberty would appear to be dropping.

In connection with puberty there is a spurt in physical development. This comes two or three years earlier for girls. There seems to be a similar spurt in mental development. The effect of this is that girls will be more developed both physically and mentally at the beginning of adolescence. The boys catch up, however, and at the end of our period 16-19 years the boys are, on the average, much taller than the girls and will have caught up in mental development.

This has educational implications. Boys tend to do less well in school particularly around the ages 15-16 years, to be less well adjusted, to get lower marks. It has even been shown that with the same results on achievement tests, girls will have higher school marks. Because of this more boys will tend to drop out from school and not pass selection barriers. However, there are large differences within the sexes in level and rate of development.

The period between the ages of 14 and 16 years is often particularly difficult for the youngsters. Conflicts with parents, school etc., are most frequent during this period, but later on conditions tend to stabilize. The same tendency is evident in criminal behaviour. The percentage of persons sentenced for crimes, petty or major, has a peak around the age of 15 years. Adjustment and behaviour will, on the whole, improve during the period between 16 and 19 years of age. At least the expression of aggression in general will become more verbal. Attitudes and interests will also become more realistic and similar to those of adults at the end of the teenage period.

Another important aspect is sex. Kinsey (1948) and others have shown that sexual activity has its peak during this period. Our culture tends to suppress sexual behaviour. This causes frustration and guilt feelings and also difficulties in the relations between the sexes. Parents and schools are often not very helpful with information and advice. Norms are unclear and not spelled out and, therefore, tend to develop within the adolescent groups. The age at which first sexual intercourse occurs would seem to be dropping. This is illustrated in Table 1. The figures relate to Sweden.

Table 1 :
Age at first sexual intercourse
Sweden 1969

	Men %	Women %
13 years or younger	2	1
14-15 years	17	7
16-17 years	38	36
18-19 years	28	38
20-24 years	13	17
25 years or older	1	1

(Zetterberg, 1969, p. 34)

There are differences between socio-economic groups. First sexual intercourse tend to occur at a younger age amongst the lower socio-economic groups. We can say therefore that by the age of 19 years most youngsters have physically and intellectually nearly reached their adult level. Adjustment and emotional stability have improved.

Emotional and social adjustment

Adolescence is a period of change-over from childhood to adult life. In the old agricultural society the child started to work early in his own home. He entered adult life gradually. Now many youngsters have to attend school and live in a rather dependent childlike situation. At the same time they are similar to adults in strength, size and intelligence and often have better schooling.

This period can be described as an "identity crisis" in the terminology of the psychoanalyst E. Ericksson. The youngsters are looking for a new identity, a role which can give them status and security. The period can be looked upon as preparation for adult life. The goals for this preparation can be listed as follows :

- Acceptance of one's own body ;
- Sexual adjustment ;
- Preparation for marriage — much time and effort is spent on finding a companion and adjusting to this person ;
- Emotional independence from parents and other adults — youngster must free themselves and become independent ;
- Economic independence — this is related to emotional independence and is hard to reach for many ;
- Selection of and preparation for an occupation ;
- Development of citizenship — this is a question both of attitudes and of knowledge ;
- Use of leisure time — this is difficult for many and has to be learned ;
- Development of a system of values and a philosophy of life — this has political, religious and moral aspects.

To reach these goals is, in many ways, more difficult nowadays. Life has become more complicated, and society is changing more rapidly.

Parents and neighbours dealt with most of the problems in the old, stable society. But now parents usually work outside the home and the members of a family only meet during leisure time. The parents often have less formal education than their children and cannot help with all the new problems. The youngsters will look for ideas and goals in the mass media, in their own groups and follow their own paths. In addition, present day labour market and working conditions are different from those experienced by the parents.

However, research in Sweden and elsewhere, for example Coleman (1961) and Andersson (1969), shows that most youngsters will have a positive attitude towards their parents and adults in general. The relations are good in most cases, and adults have a more positive attitude towards their own and other young persons than the youngsters believe.

Around the age of 15 years many young people have a negative attitude towards school and want to go to work. They criticize the school as being dull, conservative, authoritarian, lacking contact with the outside world etc. Some are aggressive, but a passive negative attitude seems to be most common, resulting in daydreaming, malingering and drop out. One can argue that the organisation and methods used tend to favour a passive uncritical type of pupil. Adjustment in school tends to improve as the pupil grows older, but I do not know if this is mainly the result of a selective school system leaving the bad pupils behind.

Some years ago there was a conflict between the Swedish Government and the Secondary School Teachers Association resulting in a lock-out of the teachers. The pupils had to carry on in the schools but were left mainly to themselves. I did some research on this and was quite impressed by what the pupils could do under adverse conditions (Henrysson *et al.* 1967). For my part I feel that we should give the pupils in this age group much more influence over their situation and give them more responsibility and power. More active work methods are also necessary.

The adolescent culture

This is now a well known concept. Several factors already mentioned tend to favour its development.

- In our rapidly developing world parents become more inadequate as sources of knowledge, attitude and security.
- Usually it is necessary for youngsters to find a profession quite different from that of their parents and unknown to them.
- The young people are often better educated and more informed about many aspects of life than the older generation.
- Television, newspapers, magazines and other mass media exert great influence.
- The new culture is more pluralistic. This means there is no longer one unifying culture which tends to be accepted by everyone. Young people are aware of alternatives.
- Youngsters stay at school much longer. This means economic dependence and a situation which differs from that of those who have jobs and families. They tend to develop habits and values together with their school mates.
- To my mind the education system is badly adjusted to the needs and interests of the large majority now staying in school.

Because of these influences youngsters tend to develop their own groups with their own values, behaviour and interests. For many adolescents acceptance by the group is very important. The adolescent is therefore willing to accept the rules of the group. This is particularly true at the start of our period. Later on he will develop more independence.

We cannot, however, talk about *one* adolescent culture, even if some traits are common. There are many, since there are many types of group with different value systems, and many youngsters live a rather independent life with specific ideas and interests.

School and career success

I shall deal mainly with prediction of success in school, which seems to be a problem common to most countries.

Rapid changes in the labour market have led to new difficulties. It is n . necessary both to have a fairly good general education and also special qualifications to get a good job. In Sweden, for example, the expansion of education has led to overproduction of people from the academic streams of the gymnasium. Our economy has not expanded rapidly enough to absorb them. This has recently led to an interesting change in the behaviour of the students. Many of the vocational streams of the gymnasium have become much more popular. The general natural science line of study, which earlier attracted the best students, has in particular become less popular, and many classes are not filled. Youngsters prefer studies with a clear goal and leading to a particular profession.

Prediction of academic success is a popular field for educational research. Many follow-up studies have been made. Most researchers have used the sum of marks at the higher level as the criterion of success. This is, of course, debatable.

The best predictors usually are as follows :

- sum of marks, grade point average, or similar measure,
- intelligence tests, especially verbal ones,
- standardised achievement tests.

They have a correlation of about .50 with the criterion according to reviews of mainly American research (Lavin, 1965). Marks are often a somewhat better predictor, if properly standardized.

At present, selection for entrance to the Swedish gymnasium is based upon the sum of marks obtained in the comprehensive school. These marks are fairly well standardized. Research was undertaken (Henrysson, Nilsson and Nordlund, 1972) to see if prediction could be improved by using intelligence and achievement tests instead of or as a supplement to the marks. We tested 4000 students in the last grade of the comprehensive school (age 16 years) and also collected marks and background information. About 800 of the students followed the academically oriented gymnasium streams after selection. With the sum of marks after two years as a criterion results were as shown in Table 2. Results after three years were rather similar.

Table 2 :
Prediction of success in the gymnasium (mean age 18 years. N = 800.)
Criterion : Marks in gymnasium grade 2.

Predictors	Correlation
Marks from comprehensive school	.64
Intelligence test	.33
Social science test	.37
Swedish and English test	.45
Natural science and maths test	.35
Weighted sum of all tests	.48
Weighted sum of all predictors	.67

As can be seen, the marks produced the highest correlation (.64). The different tests give correlations of around .40 with the criterion. The sum of all tests gives a correlation of .48. This shows that marks tend to be the best predictor, when marks are used as the criterion. Marks measures a combination of ability, achievement and personality factors of importance for success in school. A weighted sum of marks and all tests gave a correlation of .67, indicating a small increase due to the tests.

It was found that there was a tendency for girls to get higher marks in the gymnasium in spite of the fact that the average mark for boys and for girls was the same after selection in the comprehensive school. The boys did better on all the tests except the language test.

Higher socio-economic groups had higher marks in the gymnasium but the difference disappeared after adjustment for initial differences. The difference was already there at the beginning of the gymnasium.

Measures of interest, attitudes and personality traits have also been tried in many research projects, sometimes with success. But usually they do not seem to improve on the prediction already given by school marks, intelligence and achievement tests. This is especially true concerning measures to be used in a selection situation where the applicants want to pass by all possible means.

In discussions on the aims of higher education such matters as creativity and critical thinking are stressed. A lot of research is going on in these areas, but my impression is that very little of practical value has been produced so far. It has not yet been shown whether there is a general trait called "creativity" or whether creativity is more specific to different fields. Its relation to intelligence is another area where no definite results are available.

Tests of critical thinking are also available. However, it is still an open question whether almost everything measured by these tests can be covered by intelligence tests and reading comprehension tests.

The traditional approach to selection for higher education on the basis of a total score of marks and/or tests has its obvious limitations the trend is to get away from selection and to use a guidance approach instead. For the educational measurement specialist this leads to the problem of differential prediction. It implies some kind of profile of ability test scores, interest scores etc., giving the weak and strong points of the student. For each student advice will be given about the lines of study and careers in which he will be likely to achieve most success.

The test batteries so far developed are not very successful and their validity is weak. At present, we can only differentiate with reasonable success between verbal and non-verbal talent, where "non-verbal" is a mixture of quantitative reasoning, technical competence and spatial ability.

Interest inventories show some promise. But interests are not very stable during the period between 16 and 19 years of age. Career choices are very often changed. Sex roles exert a strong influence. There is the influence of tradition, too. Many choices are unrealistic and based upon the social ambitions of parents. Too many students tend to choose academic streams. However, interesting developments have occurred recently in Sweden. The vocational streams have suddenly become much more attractive.

General prediction of success in school can be done then with reasonable validity. The problem of educational guidance and differential prediction is much more difficult and present methods are not very useful.

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Problems concerning curricula and examinations in the 16-19 age group

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My theme is the interaction of curriculum and examinations, the way in which each is influenced by the other, with particular reference to the education system in England and Wales.

At present, the school leaving age is 15, but it will be raised to 16 next year. Our school leaving examinations are usually taken on average at the age of 16. There is an old established examination called the General Certificate of Education (GCE), and at 16 years of age candidates take this examination at the Ordinary level in a number of subjects. This examination caters mainly for the top 20 % or 30 % of the ability age group. Historically, this examination was taken by students in our grammar schools and is now taken by our brighter students in comprehensive schools. Side by side with this old established examination there is a new one which has been running for the past 10 years or so — the Certificate of Secondary Education (CSE) — this is an examination designed in the main for pupils from the eightieth to the fortieth percentile of ability in any given subject. It is designed, however, to have a deliberate overlap with the GCE examination — Grade I in the CSE, the lower level examination, is deemed equivalent to a pass in the GCE the older established examination. In a sense the age of 16 is the great divide in English education, even though the school leaving age is 15. Up to the age of 16 our education is a very general one with pupils taking as many as 7, 8 or 9 subjects in the examinations. After 16 we have what may be the most specialised education in Europe. Pupils then tend to specialise in either arts or science and go on to take the Advanced level of the General Certificate of Education at the age of 18 in not more than three subjects. Choices have therefore to be made between arts and science subjects at a fairly early age, and sometimes these choices are made before the age of 16. We could summarise the situation in the 16-19 age group by saying that we have high standards for the relatively few.

In England, control of education is de-centralised and, in theory, teachers control their own curriculum. Such central planning as exists is organised by the Schools Council for Curriculum and Examinations, but the Council's role is advisory. No teacher is required to subscribe to any publication by the Council, nor to any method of teaching, nor is he required to teach new content. With such autonomy for the teacher it might be expected that there would be much variety, even chaos, in the school situation, but most schools in England react slowly to change and are often very traditional. *In the higher ability and age ranges it is more difficult to implement change.* It is suggested that the influence of the external examinations system, the attitude of the universities, and t. e desire of many teachers to continue teaching their specialist subjects to a high standard in school, are all powerful conservative influences on the rate of curriculum change in the 16-19 age group.

Interaction between curriculum and examinations

As I have said, the theme of this lecture is the interaction between curriculum and examinations, but the difficulty in talking to a European audience is in the fact that whilst curriculum and teaching problems are universal, those to do with examinations are local and parochial. On the curriculum and teaching side there is some difficulty with the concept of curriculum development, which clearly varies between centralised and de-centralised systems, but nevertheless it is still true to say that curriculum and teaching problems are universal. But examination problems seem to differ from country to country and yet they are very important. If we leave out a consideration of examination problems in an international or European gathering, we may omit a very important part of the total structure of the educational system. On the curriculum side there exists what is probably no more than a myth that in centralised countries such as, for example, France or Italy, it is possible to go into any classroom at any given point of the day and find all the pupils at any given age all doing the same activity because of some edict from the central authority. No doubt this myth is no more the reality than the corresponding myth from my own country which suggests that a head teacher is free to choose entirely what will be taught within his own school. I suspect that one of the reasons why there is less variety in British schools than one might expect from the concept of head

teacher autonomy is the influence of external examination on teaching. One could indeed develop the hypothesis that the greater the age and the higher the level of ability the more influence the external examinations system has on the teaching and the curriculum. It is certainly part of the theme of this lecture that for England and Wales it has been much more difficult to change the pattern of the teaching and the curriculum in the 16-19 age group than in lower age groups and lower ability ranges, and that the chief reason for this difficulty is the influence of the external examinations system and the universities. It is also part of the theme that the more selective and competitive the situation the more difficult it is to change the curriculum. It is important to remember that the situation at 18, when students are entering universities, is a very selective one in Great Britain. We have relatively few university students, a tradition of an intensive three-year course to Honours Degree standard, and relatively few failures and drop-outs. So we have great pressure on students at the age of 18 and 19 and on their teachers. In this kind of system the universities have a very great and important influence on the work in the 16-19 group.

Developments between 1966 and 1972 make clear how hard it is to achieve the broadening of the curriculum in this age group. The English sixth form has the most specialised curriculum in Europe with pupils concentrating almost completely on either Science or Arts subjects. It is very difficult to make progress towards agreed solutions even though most people accept the need to reduce specialisation, broaden the scope of study and delay the necessity of choice to keep alternatives in higher education and careers. These principles have been expressed many times since 1966 particularly in the Schools Council Working Papers 5 (1966) and 16 (1967) and in a joint statement by two Schools Council working parties entitled *Proposals for the Curriculum and Examinations in the Sixth Form*. The latest publication, Working Paper 45 : *16-19 : Growth and Response 1 Curricular Bases*, published in June 1972, is a discussion document describing the change in the composition of the 16-19 group. Three groups of pupils are described :

Group I : "Traditional" sixth formers following the General Certificate of Education in advanced level courses ;

Group II : "Traditional" sixth formers following post ordinary level GCE courses but not following advanced level GCE courses ;

Group III : "Non Traditional" or "New" sixth formers not following any post 'O' level GCE courses.

The document makes clear that only a small proportion of sixth formers in England are actually going on to university. Proposals are made for a balanced curriculum, the elements of which would be :

- Literacy (and the related oracy)
- Numeracy
- A knowledge and understanding of man's natural or physical environment
- A knowledge and understanding of man and his social environment
- A developing moral sensibility
- A developing aesthetic sensibility
- Fashioning the environment (the creative arts and the creative aspects of technology)
- Physical education in its widest sense.

In accepting that everyone will differ in the relative importance that he attaches to these eight elements, the Working Party claims that it cannot conceive of a balanced education in the sixth form which omits or neglects any of them. In autumn 1972 it is expected that yet another set of examination proposals will be proposed by the two Schools Council working parties. One cannot anticipate the details, but it is certain that another attempt will be made to widen the curriculum by means of altering the examination system. Whatever the nature of the proposals (and some variation on a five-subject balanced curriculum is likely), the resulting change will not take place without another great debate throughout the country.

Developments within the system

Whilst these attempts to change the structure of the 16-19 curriculum have been taking place, there have been interesting curriculum and examination developments within the system. Before the Schools Council existed, other institutions had successfully promoted curriculum reform and integrated it with significant changes in examinations. The most outstanding examples are in the field of science and mathematics. The Nuffield Foundation (a private foundation) pioneered curricular changes in science throughout the secondary field ; they successfully continued their work in the 16-19 group, producing projects (and corresponding examinations) in biological science, chemistry, physical science, physics and engineering science. Similarly the *Schools Council Mathematics Project* produced considerable change in sixth form mathematics teaching. In all these cases it was necessary to obtain the agreement of the universities so that new syllabuses,

new examinations and the successful candidates were all acceptable. Little attempt was made to achieve exact comparability between the old and new syllabuses. Indeed it would be difficult to achieve any certainty about such comparability. What seems to have happened is that the workers in these fields were so universally respected that their syllabuses were accepted without reference to the traditional ones, and new standards were created within the new system.

One of the few attempts at curriculum reform in the 16-19 age range promoted by the Schools Council is the *Reading University Schools Council Mathematics Project*. Here an attempt has been made to make an analysis of the intrinsic nature of the mathematics taught and to produce packages of materials for the most important subject areas.

The lesson to be learned from these experiences seems to be that in the age group 16-19 reform of the structure is very difficult but it is easier, though never easy, to reform the syllabus and content of the subjects within the system.

Another important way in which reform is likely to take place in England is by students "voting with their feet". Many students are now studying in colleges of further education rather than in schools. Working Paper 45 points out that 25 % of the 16-19 year-olds studying full-time in schools and colleges of further education are, in fact, in further education colleges. Because of the external examinations system the actual content of the work in such colleges is probably not very different from that in the schools themselves, but there is no doubt that the atmosphere and methods of working are considerably different.

Feasibility and development studies

This is a symposium on *research* in the 16-19 age group, but there has been relatively little research described or discussed. I suspect in fact that there has been little important research on the problem of this particular age group in Europe. In the realm of curriculum development, the distinction between research and development is not a sharp one. We associate development with the production of materials, and research with investigations which normally do not imply the production of materials, but there is a very close connection between the two concepts. Similarly for examinations, research and policy matters are always inter-mingled — I would like to give you some examples of this from within our experience in England and Wales I have mentioned to you the two examinations which exist side by side — GCE Ordinary level and CSE. Pupils have difficulty in deciding which examination is best suited to them. It will not surprise you therefore to learn that we are now involved in a whole series of feasibility and development studies to see whether a common system of examining would be possible to cater for the pupils in both the CSE and the GCE. Such studies will never be pure research, and policy questions always have to be considered. The kind of research and development we are undertaking at this level is research in public, involving real candidates taking experimental examinations and being given public credit for their performance. Such research can never be purely academic.

Test of academic aptitude

My second example is the research to do with the test of academic ability. The experiment has investigated the possible use of a test of academic aptitude for use as a supplementary instrument for selection for universities. It has already been made clear that the problem of selection of students for universities in England and Wales is a severe one because of the limitation of numbers at universities and the consequent expectation that the drop-out rate from universities will be a small one. The interim results of this experiment are disappointing for those people who had hoped that a test of academic aptitude would significantly increase the efficiency of the selection procedures. The highest correlations in the school situation with first year university results are given by the average grades in subjects at the advanced level of the GCE. School assessments take second place, but the correlation of the test of academic aptitude with first year university results is lower than for either of the other two mentioned, and indeed very low. It seems unlikely that it will be possible to institute a national system of testing involving the use of a test of academic aptitude in view of the low correlations and the suspicion of such tests on the part of many teachers in this country.

Comparability of standards

My third example is the research which we have done into the comparability of standards of examinations in England and Wales. We have a number of examination boards, some regional and some local, and it is obviously important for us to make sure that standards do not vary widely between boards. We have therefore the possible following researches into comparability of standards :

— between the boards themselves in individual subjects ;

— between different subjects (though some people would believe that this is an impossible kind of research. Is it possible to compare the standards say in mathematics with those in one's native language ?) ;

— comparability of standards between years (Does, for example, the standard in mathematics change over the years ? Do our standards fall over the years or rise ?) ;

— between different versions of the same subject.

Such research is important, has policy implications, and raises some deep philosophical problems about the nature of subjects and of standards. Some research has been done on the comparability of standards between examination boards at GCE advanced level, particularly in mathematics and physics, but the methodological problems are quite formidable. Indeed, the main interest in these researches has so far been in the methods of achieving comparability rather than the actual results themselves. Methods experimented with have included scaling the results of the examinations on an independent parameter (either a common core part of the syllabus or a test of academic aptitude), cross moderation and cross marking between the various examination boards, and a direct comparison of pupils taking other boards' papers. All the methods have given rise to controversy and no conclusive results have yet been found.

My general theme has been the difficulty in changing the system as we progress up the age range and the ability range. It has been comparatively easy in the primary field in Great Britain, moderately easy in the lower secondary ranges and fairly easy at the C.S.E. level of ability, but very difficult in the 16-19 age group particularly with the brighter children. Our research in the Schools Council demonstrated the changing nature of the 16-18 group in schools, the unsuitability of our present examinations for very many pupils, and therefore, obviously, the unsuitability of the courses too. It has, however, still been very difficult to get change in this situation, particularly change with regard to the structure, though I hope I have demonstrated that it has been easier, though never very easy, to make a change within the structure. The work pioneered by the Nuffield Foundation and the Schools Council Mathematics Project are examples of quite dramatic changes in content if not in structure.

This lecture has described the situation in England and Wales and has not attempted to give a description of the European situation ; I would like though to put some questions for discussion in our working seminars. Such questions are :

— Is the English experience of increasing difficulty for innovation and change at the higher age and ability levels a special one ?

— Do examinations interact with the curriculum in all the countries, or is it a peculiarity of a country like England with an extensive external examinations system and autonomy for teachers ?

— Is it easier to plan curriculum change at lower age groups and lower ability groups in other countries as well ?

— Is there a lack of correspondence between the curriculum as taught in this group and the curriculum as thought necessary by very many, indeed a majority, of people in the country ?

— If this is so, is it because of the influence of the universities ?

— Are there very great differences in countries which have centralised and non-centralised systems in their response to change ?

During the working group discussions which followed this lecture it was seen that in France, with a fairly well centralised system, it was relatively easy to plan new structures but that teachers paid lip-service to the new structure and yet continued to work in the old way. It is possible for teachers in a centralised system to hide behind the new structures in such a way that they readily agree to minor changes but the major intentions of the central planners are often frustrated. This is an extremely interesting contrast with the situation in a de-centralised country like Britain where the change in structure is much more difficult to achieve, where teachers are themselves involved in the planning of new curricula and new work. In such a system progress is slow, very slow, and indeed the final result may be not dissimilar to that described in France. Perhaps the moral for this is that in both kinds of situation no real progress is possible unless the teachers concerned are fully persuaded of the importance of the change and fully aware of the underlying implications of the changes.

Technical and vocational education - Problems and research

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INTRODUCTION

There are not only biological mutations. There are also technological mutations and these have exerted a great influence on the development of our society. Vocational and technical training cannot disregard these mutations. For example, electronics and automation have ousted mechanics from the leading place it held in the 1920s. The language of these technologies can be considered a lingua franca, fulfilling the same role as Latin in the Middle Ages.

Because of technological mutations people holding technical and vocational qualifications often find great difficulty in fitting into industries. The mental activity for which they have been trained does not necessarily correspond to that which is expected of them by industry. In consequence, industries themselves are developing their own training schemes which assume a counter-university character.

The main aim of this paper is to set out, by means of examples, modifications that need to be made to technical and vocational training in order to adapt it to present day technological mutations. Moreover, major research themes need to be put forward, the results of which could indicate the paths to follow. It is necessary to define the new package of knowledge and skills demanded by current trends, a package differing greatly from the traditional one. The problem which is so much discussed nowadays of whether to continue giving technical and general education side by side or whether there should be integration can only be solved after a consensus of opinion has been reached on the new knowledge and skills required.

By studying the problems raised by technical and vocational training, given the rapid changes in production systems, it would be possible to present existing solutions and their present stage of development, it would be equally possible to try to outline the problems raised by technological developments as they bear on the instruments of basic and further training. The latter approach seems more worthwhile, despite the numerous difficulties it involves.

Technical and vocational training, basic and further, poses in turn several questions.

Analysis of jobs, functions, tasks in industry

This analysis brings in economic, financial and technological aspects as well as the aspirations of social groups.

This analysis should not be based on reward hierarchies, but on levels of skill and the development of skills.

— A first set of questions therefore is concerned with the concept of levels of skill (and concepts of qualification) required and of skills acquired.

— A second set of questions is concerned with the development of qualifications for each level and from one level to another.

Studies of job placement of former technical and vocational trainees

— By time series analysis to try to break-out indicators of correspondence (or match) between training and objectives.

— Studies on the populations entering categories of job should also be conducted.

— A further research area concerns careers in industry and vocational sectors.

Studies on the organisation of technical and vocational training

— Should a distinction be drawn between technological instruction and technical-vocational training ?

— How would technological education be organised to follow basic general education ?

What would be the branches leading to technical and vocational training ?

How would further training fit in with activities in industry and in educational establishments ?

— Will pedagogical content and methods evolve ? Can simulation play an important part in certain training in conjunction with research into transmission of skills and knowledge ?

— Diplomas or certificates normally attest to vocational qualifications acquired during basic training. How to design such *vocational tests*

and how to establish equivalences between diplomas of different countries ?

— Can diplomas be devised that would attest to qualifications acquired actually on the job ? Such acquired qualifications are identical with the qualifications required for doing the job and are therefore, at least to some extent, very specific and are assigned a high time co-efficient, (i.e., they are significant for a given job assignment, and thus for a fairly short period which moreover may vary from one occupational sector to another).

Time clearly does not permit closer examination of these various points, even when consideration is only given to as clear a statement as possible of research problems and hypotheses. But to pin down the level and extent of the questions raised, a few examples will no doubt suffice. It seems interesting to take :

- Levels of skill,
- Evolution of functions,
- Distinction between technological instruction and technical and vocational training.

LEVELS OF SKILL

Critical areas

The question raised requires an observation, a description of study processes and of manufacturing techniques, but willingly confining the field to the industrial sector only.

This description should show up the *sensitive areas* or *critical areas*. It is proposed to use these terms for those job functions which directly imply changes in manpower structures for production and in the combinations of skills betokened by these structures.

It is, if not certain, at least highly probable that those observations will betoken a major re-thinking of still generally accepted vocational training levels, which are :

le manœuvre	unskilled worker	ungelernter Arbeiter
l'ouvrier spécialisé	semi-skilled worker	angelernter Arbeiter
l'ouvrier qualifié	skilled worker	Facharbeiter
le technicien	technician (end of upper secondary education)	en RFA Absolvent der Fachschulen oder der neuen Fachoberschulen
le technicien supérieur	advanced technician (end of post-secondary studies at varying levels)	en RFA Absolvent der Ingenieurschulen Ing. grad.
exemple : l'ingénieur des grandes écoles (toujours 5 ans *au moins* après le baccalauréat on reconnaît des différences de niveaux théoriques et techniques)	technologist (university degree)	Diplom-Ingenieur Doctor-Ingenieur

It should be noted in this connection that the usual job analysis techniques (1) are insufficient to meet the objectives of such research. This aims in fact to define the contents of training and development of skills. After basic training the individual should be able to benefit from further training and adapt to technological and economic developments, he should be able to ensure his advancement at work and in society as a whole.

(1) We are aware of course that these job analysis techniques answer to particular objectives and those are most often concerned with the organisation of production work in industry or the establishments of wage scales.
We are equally aware that numerous new types of job are emerging : memory/programme typewriter operators, controllers in power station complexes, workers and service technicians in automation and control/servo circuitry. These functions are solemnly included in wage scales on the basis of their titles, but this classification lacks real significance, and the wage scale structures will one day be changed.

Qualification profiles

Based on a definition of these critical areas, *systems analysis* and *analysis of content* should be used to *determine levels of skill* and the structure of those skills, in other words *qualification profiles*.

These qualification profiles and levels of skill are not directly related to economic sectors as classified in accordance with industrial and commercial criteria. For example, the job of maintenance mechanic exists in the iron and steel sector, engineering and the electrical industry, just as on the industrial side of the clothing or food industries.

Moreover the qualifications profile *required* for a job will depend on several factors, viz. :

a) The size of the firm — the staff employed in the firm and in its production workshops, and also the scale of its assets, together with the financing and credit methods it employs.

b) The organisation of the firm and of its production operations. A large firm may make all the equipment (components) it needs, but it may also subcontract certain production items (contracted-out items). Its organisational set-up may follow a variety of possible patterns.

c) The workshop equipment and machinery, and its level of technological sophistication.

d) Production series and production rates.

e) The technological sophistication of the product made, the reliability required and the maintenance and servicing requirements of the products.

(The manufacture of an item of farm machinery does not involve the same problems of precision and reliability as that of the steering mechanism for a parabolic space-communications reflector, even if the mechanism is similar in principle. The degree of production organisation and technical control is therefore not the same, nor are the skills required).

f) Other factors, both technical and human, come into play ; communication between departments and individuals within the firm is a highly important aspect, as are the further training of staff and the pay structure.

Qualifications required and acquired

We shall assume that systems analysis will make it possible to identify the *qualifications required* for the specific functions involved in various sectors.

The *qualifications required* for a given function (for example, the operation of a battery of production machines, the design of tools, the maintenance of automatic control circuits, the dimensional quality control of products, the planning of machine working methods, etc.) will undoubtedly show a wide range of variations between one sector and another, between one firm and another, and even within the same sector, around a common trunk of knowledge and skills. An initial training system specifically adapted to each sector and to each firm is virtually inconceivable. The common trunk will therefore be taught, resulting in an *acquired qualification*.

If manufacturing methods have been revolutionised by economic and technological changes during the period which elapses between determination of the required qualifications and the arrival of the first batch of persons with the acquired qualifications, their initial training will be so unsuitable as to be virtually valueless.

The resultant problem can be stated in the following terms :

— Study of the gap between required qualifications and acquired qualifications as a function of time and technological and economic changes in manufacturing methods.

— Design of a system for the study of production methods influencing the training system.

Definition of levels of skill — relative to what reference base ?

There is a temptation to define levels of skill on the basis of the pay hierarchy. In many cases, however, this is not a true reflection of the level of initial training, particularly since a distinction has to be drawn, from the "technician" function upwards, between "functional" jobs and "operational" jobs, the latter frequently carrying special premiums.

Another possible reference point is the level of the school-leaving certificate. But the difference between this level and the responsibilities borne inside firms vary considerably. Fifteen years after leaving school, a holder of the *baccalauréat* may be in charge of a typing pool of six secretaries, whereas an ex-pupil of a technical schoool of the *Berufsschule* type may rise, over the same period, to become head of a design office employing thirty technical draughtsmen.

Another possible yardstick is the specialised knowledge required for a particular post as compared with university level education ; alternatively, the

rather hazy concept of general cultural background may be used (but how ?).

It may be interesting to examine the last-mentioned method in terms of a precise example, since it may enable us to suggest a definition of technology in relation to techniques and to the way in which knowledge is currently compartmentalised at the universities. It also provides an opportunity for a few observations on the concept of culture.

Example

Let us take the example of a maintenance technician servicing the automation circuits in a battery of machi ols.

Data in rm of input signals E are supplied as a function of the dimensional, physical and mechanical characteristics X of the raw material and of the results obtained after machining, e.

$$E = A (Xi, ei)$$

(Xi and ei vary with time).

A product of a certain size and shape y appears at point S :

$$S = B (Yj)$$

(Yj varies with time).

This product is required to have characteristics corresponding to the programme data Z :

$$S = C (Zk)$$

For each product, it is required that C (Zk) — B (Yj) shall be lower than a given tolerance, or acceptable deviation : e.

$$C (Zk) — B (Yj) \leqslant e.$$

This product "S" obtained is automatically checked, and the results transmitted to a comparator which determines the differences between C and B and, after processing them appropriately, adjusts the settings to which the machine processing and control unit is working, in other words modifies E.

The speed at which the settings are adjusted must be higher than the operating speed of the machinery.

An analysis of job content reveals that such a technician requires a theoretical knowledge of physics and mathematics corresponding to larger or smaller areas of the university courses in those subjects. Furthermore, the knowledge applied by such a technician corresponds to various levels, some of them high. The technician also needs a special knowledge of manufacturing techniques as a whole, together with specific knowledge of organisational methods and techniques, and his knowledge goes deeper in some fields than in others.

All this constitutes a corpus of knowledge or "package of skills", which is significant in relation to the technological objective as expressed by :

$$S = C (Z) — B (Y) \leqslant e.$$

Thus technology marshals knowledge in a coherent, ordered manner in order to attain a given objective. It makes allowance for developments in that knowledge, which is enhanced by new scientific and technical additions, while the ways in which the different areas of knowledge are combined remain more or less the same as long as the objective continues to be valid.

How then do we define the different levels relative to courses of university education ? *It would in fact seem more appropriate to relate the definition of levels to the technological objectives.*

It is true that these objectives are utilitarian and are not concerned with the acquisition of knowledge as such. But scientific development has now crossed a threshold which we may call the *phenomeno-technical threshold.* This means that scientific observation is gaining in refinement and is being applied to phenomena which are produced or "manufactured" by means of technological apparatus (the synchro-cyclotron for the study of matter, the electron microscope, apparatus to measure surface roughness by means of induction or piezo-electric effects, all instruments without which certain precise phenomena could not be isolated or even perceived). This being so, can the technological level be easily passed over as a reference scale by which to assess levels of skill ?

Is the intellectual approach to a balanced training any less sound in the case of portions of knowledge pieced together for technological purposes than in the case of a body of knowledge acquired in order to understand a whole family of phenomena ? This is no longer certain in a great many cases.

Does the fact that the technological objective changes, and consequently that the "package of skills" required for it has to change, invalidate that package of skills ? Not always, because technological objectives defined in terms of "functions" and not in terms of "jobs" are almost as stable as families of related phenomena in a subject which is regarded as homogeneous at a given point in our understanding of it (for instance, physical optics and electro-magnetism). For example, a package of skills designed to master the regulation and servo functions of power units and manufacturing machinery offers a relatively stable basic pro-

gramme. While scientific and technical advances since Maxwell's theory was first put forward have established the relationship between optical phenomena and electromagnetic field phenomena.

All these questions provide food for thought about the possible combinations of subject-matter for educational and technological training programmes.

Research into the value of these new packages of skills as intellectual training might be worthwhile.

Technological culture

If we now go on to consider what general "culture" is imparted by the packages of skills illustrated by the above example, we immediately come up against the problem of culture itself.

The culture of the 18th century gentleman is certainly not of this type, nor are what might be referred to as "the culture of scholarship", nor the "culture of the social graces", nor the "culture of conversation". It may be argued that this technical culture is not a "humanity" since it is not derived from a study of mankind.

Nevertheless, technical training does develop certain intellectual attitudes corresponding to types of behaviour which can be described as cultural.

The technician's approach to his work is fairly pragmatic, though he makes use of scientific techniques and methods. This is because the work he has to do involves a large number of factors of varying origin and which he cannot manipulate in order to bring about a "laboratory" situation.

The technician is interested in theories of cause and effect and, generally speaking, in theories which offer a rational explanation for groups of phenomena in specific fields (electronics, organic chemistry, particle physics, group psychology, characterology, etc.).

But the technician distrusts any systematic, comprehensive use of theory to solve the everyday practical problems with which he is faced. He is interested in theory only if it suggests general ideas and possibilities which may give him a better insight into a situation, since he realises that theoretical views can change as the state of the art changes (an example is the theory of light : it was first thought to be granular, then to consist of waves, and then to be both corpuscular and wave-like). What the technician looks for in scientific developments and technical advances is methodological instruments which he can use to find the solutions he requires.

The technician's approach, therefore is not directed towards theoretical, speculative developments and, unless his personality tends strongly in this direction, ideological dogmatism is not a feature of it, or at least is not a consequence of technological studies themselves. The typical end-result of a technological culture or a technological background is a certain pragmatism, the use of trial-and-error methods in conjunction with rational observation and measurement techniques, a taste for concrete situations and a desire to analyse and master them in the context of a real situation.

The intellectual training afforded by the "package of skills" involved in technological studies gives rise to new general attitudes.

In short, by mixing some gin, a twist of lemon and a beaten egg, one can produce a cocktail which has by no means the same effect as an egg, a lemon and some gin consumed in turn over a period of time.

This observation brings us to another point which arises from observation of practising technicians. It is often discovered in the course of sociological studies that technicians are dogmatic and conservative in their approach to their job. How does this square with what has been said above ? The problem involved here is *the distinction between technology and the study of occupational techniques*. In the jargon used to date, the words "technology" and "technique" have often been confused, and the word "technician" has deliberately been used to mean a person who should rightly be called a "technologist".

However, before going on to the educational problems which arise from these considerations, it may be as well to say something about the problems of changes in qualifications.

CHANGES IN FUNCTIONS

Statement of the problems

By working out a rigid grid of functions and qualifications by level and job sector, and by presenting hypotheses concerning changes in function in the form of algebraic relations, it is possible to obtain an embryonic mathematical model, the aim of which is not to provide a forecast about the job situation but merely to illustrate some of the problems of such a forecasting study.

Two hypotheses can be used to supplement this approach :

H. 1 - It can be assumed that jobs vary in a fairly continuous manner over a given period.

H. 2 - It can be assumed that the job variations occur suddenly, the changes being discontinuous.

These two hypotheses should be used as appropriate in interpreting studies to discover variations δ as a function of several factors, e.g. :

f1 - The situation of a branch of technology relative to scientific discoveries.

f2 - The situation of a technological production line relative to the economic life of a typical product.

f3 - The situation of a branch of technology relative to the production situation on the overall industrial production curve.

f4 - Changes in the job pattern in relation to the dynamism of the company (relative to its marginal economic potential, which makes investment possible, and to its intellectual potential for innovation and forecasting).

f5 - Changes in the job pattern and the characteristics of the firms.

Lastly, the relative variations in the δ factors must be studied as a function of time in order to see how the packages of skills (or combinations of knowledge) vary.

Methods

The methods used for such studies must necessarily be borrowed from systems analysis and job evaluation ; the study of the time series also plays a part. A systematic search for correlations may also help.

Partial examples

The importance of f1

The time which elapses between a scientific discovery and the decision to make industrial use of it is shrinking, whereas in the advanced technologies the time which elapses between the launching of an industrial idea and mass-production is growing.

Consequently, it is very difficult to make forecasts about initial training and the nature of qualifications. These difficulties were experienced in the training of qualified electronics personnel and technicians when the decision to use semi-conductors on an industrial scale was taken.

This is a case which illustrates the need for a transition from hypothesis H. 1 to hypothesis H. 2.

Another typical example of the need for hypothesis H. 2 is the situation that arises when sudden changes take place in manufacturing techniques, often in the case of basic products which are not technically very sophisticated (and which undergo no complex factory processing). This happened to the production of ammonia for fertilisers in the years around 1960.

The importance of f2

This last example shows the importance of the factor f2. Every product has a certain economic life, and generally speaking the least elaborate products (coal, natural gas) have a longer and more easily quantifiable life than very elaborate ones (pharmaceuticals, for example).

Changes in products may or may not be bound up with changes in the knowledge required for intermediate-level jobs. A long-term study of the major families of products, covering the qualifications required for certain job levels, might be worth considering. But is it possible and worthwhile in view of the time factor ?

The importance of f3

For every new product there is a *market* which moves through a succession of time phases :

— Phase One is that of the launching and development of the product. The growth rate is 20 % per annum or higher. Investment decisions are difficult to make, and there is a considerable risk of "backing a loser".

— Phase Two corresponds to the truly industrial period of the product's life. Generally speaking, the growth rate lies between 10 % and 20 %. But it is not always very clear how long the market will last, and it is subject to the pressure of competition. The cost price constraint is the important factor, and this is bound up with such questions as length of run, rational working and production capacity. The functions and forms of the manufacturing operations in the workshops and offices become more clearly defined, and frequently expand and change to some extent.

— Phase Three, assuming the product has been successfully marketed, sees a growth rate between 5 % and 10 %. The investment made in plant and research must be written off during this phase. Since the product still has its competitors, the decisive factors in maintaining its

market position are a concern for quality, proper organisation of the distribution network, intelligent advertising, and sound management directed to keeping cost prices down so that the investment can be written off despite frequent falls in selling prices (competition). The employment situation remains stable if the firm maintains its position.

— Phase Four is the falling-off of the market, perhaps even the disappearance of the product. Since the investment has been written off by the end of Phase Three, profit on sales during this phase must be used to build up capital for launching other activities. Maintenance and advertising costs are cut back, in other words the firm "dis-invests", during this period, while the product is still in production. The job situation is consequently affected, and it may be necessary to make provision for redeployment.

Remarks : As will be appreciated, it is very difficult at company level to forecast changes in the employment situation and job qualifications, since it is not clear in advance how long the various phases will last.

Conclusions

This short account of forecasting problems should have illustrated how difficult it is to establish parallels between the subject-matter or vocational training programmes and studies of qualifications. Information is itself difficult to grasp, and there are sizeable time lags between pedagogic phenomena and industrial phenomena.

The question then, with a view to the future, is what balance should be struck between vocational technical training and technological types of training. This balance will moreover be affected by the level of qualification.

EXAMINATION OF A POSSIBLE FORECASTING MODEL FOR TECHNICAL AND VOCATIONAL EDUCATION

(This model has been put forward for France, by way of an intellectual exercise).

Observations

— We too often approach the future in terms more appropriate to the past. What is striking, if one looks at technological change with the objectivity needed for an overall perspective view, is people's inability to grasp the presence of a radical innovation as actual reality.

— What has happened since the goals for classical technology were reached ? (These goals can be summed up as "the mass production of material goods".)

Since then we have seen the birth of "techniques of understanding", which enhance our powers of observation, comparison, and consequently forecasting.

a) The mere accumulation of these techniques takes us beyond a threshold which opens up the possibility of original creative ideas.

b) The techniques of physics proper (lasers, holography) which are employed by the "techniques of understanding" expand the frontiers of what we can observe and throw fresh light on real phenomena.

c) We achieve greater mastery over time.

d) We also achieve greater mastery over space (distance).

The last two factors mentioned may result in a more "comprehensive" knowledge which is not yet taught methodologically, for man-made administrative structures always lag behind advanced knowledge, and there continue to be calls for more specialisation at university level (in the 3rd cycle approximately), whereas a methodological approach to comprehensive knowledge might already be envisaged at a higher level.

e) The possibility of working in real time makes it possible to influence a situation before it changes.

f) Automation may continue in the production field provided that economic and social studies are carried out (automation should not be confused with automatic machinery).

— In another sense, where values are concerned, the upheaval which will take place calls for an awareness which will make it possible once again to draw a distinction between : "the values of civilisation", which Gaston Berger suggests are universal values (moral values, rejecting the brutality and barbarity in society and entailing respect for the individual) and the "values of culture" (or cultural values), otherwise referred to as "personal values", again using Gaston Berger's terminology.

Whereas the values in the first category are irrefutable, as the proof of a scientific theorem is irrefutable, those in the second category are relative and are subject to outside influences, just as individuals are.

We have great difficulty in dissociating the cultural values by which we live in our present surroundings from the values of civilisation. We always tend to relate the common reference framework to ourselves. This is why, for example, when we assert intellectually that the most important values in the context of a child's upbringing are its capacity for innovation, adaptation and creativity, underlying our statement always seems to be the unspoken qualification : "it being understood that innovation and creativity should lead others along the same lines as those I myself have followed".

— As far as certain special techniques are concerned, the following is worth noting :

a) *Industrial drawing*

The search for a means of communication such as "connotations" and the various "reading levels" must not lead to any change in the corresponding action, since the latter must be the same whatever the language used and whatever the industrial organisation in question.

The result is a combination of geometric projection and standard codes for lines, inscriptions, the representation of shapes and international standardisation.

At the second stage, this industrial drawing evolves towards derived forms corresponding to the evolution of intellectual and technical functions in industry. Hence functional drawing.

b) *The current move away from the study of objects towards the study of systems.*

c) *The calling into question of technical solutions at the design stage. Relative approach to solutions. Creation and organisation techniques.*

— As regards the question whether the content of initial training is appropriate to the job actually done, we must be careful to avoid red herrings. Bearing in mind that occupational functions change, it can happen that following an analysis of the necessary actions and reasoning processes, the choice of training to inculcate the appropriate qualifications during the initial stage falls on one " source discipline ", or subject, which is of no immediate use, as a body of technical knowledge, for the purpose of a job as such (an example is the general electrical theory which skilled nuclear power station personnel learn during their training).

— Having made these remarks, and bearing the foregoing in mind, we can now go on to outline an evolutionary model for technical and vocational training ; it is no more than a theoretical concept, subject to amendment in the light of research results.

RECOMMENDATIONS IN RESPECT OF TECHNOLOGICAL EDUCATION

— Technological advances, coupled with changes in life-style and translated into terms of knowledge and skill, pose the problem of the distinction between technological training and vocational training. The first may become a branch of general training or "technological education" which is just as necessary as an education in economics. Technology starts by being creative, then it consumes techniques, destroying them in designing new ones ; it helps to explain changes in society.

The purpose of vocational training is placement in production or commercial jobs or functions. It is concerned with techniques as much as with technology, and often more so.

— This being so, some short-term possibilities are as follows :

- In the technical high schools, the trend towards technical school-leaving certificates designed with a view to technological education rather than vocational training could be encouraged.

  The technical school-leaving certificate would then lead on to fundamentally technical courses of university education or post-secondary training.

- The BEP (2) and possibly CAP (3) streams in CET (4) schools could be strengthened so that students might follow courses of vocational technical training leading to a technician's qualification. The "élitist" tendency would thus be satisfied while the mass vocational training function would continue — at least the probability of creating such a situation would be enhanced.

  These pupils would remain at school longer (for at least one year longer) than those going direct into high school classes to study for a technical school-leaving certificate, but this

(2) BEP = Brevet d'études professionnelles (vocational training diploma) for general skills.
(3) CAP = Certificat d'aptitude professionnelle (vocational training certificate) for specialist skills.
(4) CET = Collège d'enseignement technique (French technical school).

would be a first step towards the acceptance of the idea that studies for a vocational qualification should not be measured by the same time-scale as general training studies, less still general vocational training studies. This change in attitudes would probably help to pave the way for the wholehearted acceptance of continuous training. The CET schools might be called "vocational high schools" as a preparation for the next phase.

— Looking at the longer term, provision should be made for a more flexible approach to vocational technical education and technological education, since the present levels of qualification may well cease to have any meaning at all.

One possibility, in these circumstances, would be to keep only one stream of technological education or training leading up to the level now attained by university institutes of technology, and covering more precise areas of technical training at the end of the course. But there would be a variety of possible arrival and departure points along the line ; students could, for example, leave at as early an age as 15 years. Each leaver would go on to a suitable course of vocational training. Depending on the results of economic forecasts in respect of employment skills, the vocational training at school could be either concentrated on a precise area or regarded as intellectual preparation for a practical activity. Any problem which arises at work calls for a mind attuned to the attainment of practical objectives and a package of skills derived from a variety of academic disciplines. Moreover, the package varies from one technical problem to another. Failing any precise economic forecasts, vocational training could be conceived on a broad basis in order to develop such skills in a highly concrete manner at each of the levels attained, making the pupils fully familiar with the use of different materials in the major sectors of occupational skill. (Here a distinction could be drawn between these sectors and the present division by economic sectors ; for example, a sector of occupational skill may correspond to the functions involved in maintaining electronic equipment, and these functions exist not only in the engineering sector but also in the food industry, electronics etc.).

At this stage, the "vocational high school" and the "technological high school" would then be merged with the technological training stream with pupils leaving at different levels of technical vocational attainment.

— Looking even further ahead, it is conceivable that the technological stream of education will be a branching network of the scientific streams, with vocational technical training starting at each departure point. Continuous training will then appear quite naturally as a relatively comprehensive integration of productive activities and training activities.

— Technical schools and technical high schools should already be regarding themselves as "open establishments" — open not only to the world of industry and commerce but also, by reason of their technical laboratory equipment, to university centres and engineering schools, so that the teaching staff may be enabled to cater more fully for the increasing interdependence of the physical sciences and technical testing, observation and application.

Economic aspects of education of the 16-19 age group

by Professor F. EDDING,
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Economists have contributed to educational research by appraising organised learning as an important factor in economic growth and by analysing the interdependence of the supply of qualifications obtained in educational institutions and the demand for qualifications. They applied, furthermore, planning methods and techniques which were developed for other macro- and micro-economic purposes to problems of education-planning, particularly to cost-analysis, cost-projection, and cost-benefit calculation. Economists confronted educators and educational administrators with problems of budgeting and financing methods. They broadened the view of educators by demon-

strating to them that the role of education as a subsystem of society cannot be adequately understood without studying the interdependence of the educational province and the economic forces dominating in the surrounding world.

Moving from fact finding to recommendations for action two guiding questions indicate the way :

— What should be done in education in order to improve its efficiency and to contribute to socio-economic development ?

— How should the economy be organised and function in order to further educational goals ?

The concepts and instruments of the economics of education can be applied to the subject discussed in this Symposium. But it must be stated here that until now only a few research activities in the economics of education have been undertaken to improve our knowledge concerning the educational conditions and problems of the whole 16-19 age group. Some research has been done on specific institutions catering for parts of this age group. But the interest of this Symposium, as I understand it, is focussed upon problems concerning all the adolescents between the end of compulsory schooling and the beginning of adult life.

We have been asked to think about the present educational structure, the relationships between all the institutions serving this age group and about a possible reshaping of the whole system. This approach is certainly useful and may lead to new insights and research projects, but I repeat that very little can be said here based upon existing studies or research in progress as far as economics is concerned.

In this situation it may be of interest to discuss in a speculative way the subject of this Symposium from two points of view which are familiar to the economist, namely (a) how to improve cost/benefit relations and (b) how to improve the financial regulations governing the education of this age group. This may help to formulate some useful hypotheses and induce research activities for their empirical testing.

Rationalisation of conditions

To improve the relation between efforts in the field of education and benefits derived from these efforts is a generally accepted goal, at least as long as it is not further specified. However, specification is no easy matter. It is extremely difficult to measure the efforts and almost impossible to calculate the benefits of education serving this age group. But we may, nevertheless, profit from formulating some general ideas about the rationalisation of conditions in this field.

Rationalisation means optimizing structures, methods and means of education in relation to acknowledged aims and objectives. The aims of education are derived from general societal values and goals. The democracies of Western Europe, for instance, are guided by a high priority accorded to individual autonomy, opportunities for social mobility, tolerance, free flow of information and communication, voluntary civic activity, free enterprise, economic growth and free choice for the consumer. But these societies also want a certain basic equality, a healthy environment, national cohesion, efficient government, enforcement of general rules. Far from being complete, this list of values and goals is, however, long enough to demonstrate that it is rather difficult to rationalise education in view of the multitude of aims, some of which are certainly often in conflict, if not contradiction, with each other.

The *complexity of educational aims*, as mentioned above, clearly indicates that the economist when thinking of rationalisation in this field cannot take only one aim into account, e.g. economic growth. And we certainly cannot hope to measure the effectiveness of education by looking at one objective which presumably serves economic growth adequately, namely vocational competence. In this connection we have to add that the economy too has to fulfil complex multi-dimensional societal goals, and its performance cannot by restricted to cost/benefit calculations measuring the benefits only in terms of material product.

Another way of asking what rationalisation can mean in this context is to *search for characteristic needs* of the 16-19 age group. One answer is that these young people need adequate preparation for those tasks or roles which they are expected to fulfil at the end of the age period in question, in particular in connection with

— self-reliance,

— vocational careers,

— marriage and parenthood,

— civic activities,

— continued education.

It seems evident that it is necessary to prepare everyone in that age group for these tasks. It would be incompatible with the interests of the individual and of society, and it would be obviously in contradiction with the concept of rationality as defined above, if adolescents were prepared for one of these tasks only.

There can be no doubt that after the *general socialisation and orientation process* during the years of compulsory schooling the emphasis must be put on educating adolescents for more concrete and specific tasks. But this certainly does not mean restricting education for the 16 to 19 year-olds or for parts of this age range to the preparation for a vocational career, either in the manual skills or in some more academic field. For the whole age group the main goal of education must remain that of promoting the general personal development needed in the various roles of the adult and for the enjoyment of a full life.

Rationalisation means, therefore, "reconciling" vocational specialisation with general education. We define general education as the sum of qualities and abilities *every* individual should have developed as highly as he can before he enters adult life. Our thesis is that one of the necessary components of this general education must be a marketable vocational competence. Coming of age should coincide with the real possibility of economic independence which means gainful occupation in a position corresponding to personal ability and the length of preparation. *Individual autonomy*, one of the great aims of modern education, demands that at the age of entering adulthood everybody is confident of being economically independent. Everybody should also be sure of his ability and should have sufficient opportunities to improve his vocational competence by continued learning.

It would seem possible to achieve this and to prepare at the same time for other important dimensions of adult life, but it would necessitate rather drastic reforms of curricula and teacher training and the close co-operation of schools with private firms and other non-school organisations.

Some rare examples show that it is possible to give vocational education a polyvalency and transfer quality which ensures the compatibility with the other aims of personal development. Qualities like logical thinking and creative thinking can be developed equally well through studying languages, mathematics, natural sciences or social sciences. They can also be developed through the more practical application of such subjects in vocational training. Ability in the fields of problem-solving, communication, co-operation and decision-making and readiness to take over responsibility can be developed even better during the performance of more practical tasks.

It seems that a large part of the frustration and passivity to be observed in educational institutions today is caused by one-sidedness : a too narrow training for vocational knowledge and skills in technical education and a neglect of the practical application of sciences in the more academic types of school. Therefore many students are bored ; they protest or drop out. Learning efficiency is low. Our thesis is that motivation for learning can be improved if a student can imagine or, in the case of problems he has already experienced, can understand the relevance of abstract subjects for a future activity. This can be achieved by planning the curriculum as a preparation for tasks known through out-of-school experience and made known to the student as future activities to be fulfilled.

Interdependence of knowledge and activity

At present, the education offered to the 16 to 19 year-olds ignores or neglects to a large extent the interdependence of knowledge and activity. To be more specific, one could argue that it is neglected in the field of vocational training and that it is almost completely ignored in the more academically oriented schools leading to higher education. Since traditionally these schools promise the best chances for future income and social status a growing proportion of adolescents is channelled into a kind of learning for which they are not really motivated and where their educational gain is much lower than it could and should be.

The concept of recurrent education promises to improve *the immediate socio-economic returns of education* and also to solve problems of finding suitable employment for school leavers. A curriculum which is planned to enable all graduates from secondary education to take up at the age of 19 or 20 jobs requiring specific qualifications will not produce masses of young people who are prepared mainly or even exclusively for continued learning in higher education but who fail to be admitted by these institutions ; the personal psychic as well as the social costs are enormous and should be taken into account in our attempt at describing cost/benefit relations. A new curriculum which includes enough intervals of practical activity will also ensure more flexibility in the relationships between education in school, introductory training in industry, administration and other services and the start of a full-time career. It is likely to avoid much misinvestment as regards educational effort.

The school as a type of social organisation specialised in the provision of systematic learning has been expanding for a long time. During recent years this development has been criticised by the *de-schooling movement*. The concept of recurrent

education also implies a de-schooling tendency. De-schooling has different meanings ; it can refer to more emphasis on studying problems known to students and on preparing them for tasks in their own life. instead of leading them into the endless world of abstract knowledge and history. De-schooling also criticizes the monopolistic tendencies inherent in all school systems and observable in other fields as well where an institution is seeking expansion for the mere sake of expansion. Economists tend to mistrust monopolies ; they prefer competition. In this case the economic argument is assisted by the findings of psychologists and many educators. They show that too long uninterrupted periods in school have a deforming effect on personal development. Therefore, alternating periods of school and other activities or learning situations are advisable.

Rationalisation of this kind is particularly recommended as regards the education of the 16-19 age group. The protection from pressures, exploitation and temptation, as well as systematic educational guidance, provided by schools is still greatly needed by most adolescents. But the school can hardly claim to fascinate most students to such an extent that optimal results are guaranteed. The school cannot introduce non-school learning situations which are closer to work activity and challenging to young people. Activities in youth organisations, in social work, in industry and services cannot replace school, but they can offer a necessary educational complement.

Alternations between learning situations are already practised to a certain extent in all countries of Europe. In order to optimize the education of the 16-19 age group this practice needs further improvement and generalisation. Much thought has been given to the problem of how to reform schools. The same is true of apprenticeship and of other organisational arrangements relevant wholly or partly to the age group in question. But how all these ways and means of learning, production and leisure could become parts of one system designed to ensure optimal education is rarely studied.

Organised learning

Many educators believe that this can be achieved only by obliging 16 to 19 year-olds to participate in organised learning. They argue that a considerable proportion of these youngsters and of their parents are relatively short-sighted and possibly financially restricted ; therefore they give high priority to earning money as soon as the law permits. Nor do educators believe that there will be sufficient voluntary co-operation for educational purposes from the employers. They admit that the prolongation of compulsory school, especially if it includes vocational training in laboratories, workshops, etc. will raise big financial problems. But they argue that the social costs caused by incompetence for adult roles, by inability to lead a balanced personal life, by unemployment, disorderly behaviour and criminality should be weighed against the cost of giving young people a good education. If school is a good thing for the whole age group, they say, then in such a rich part of the world as Europe it should be only a question of when such a prolongation can be financed and realized, not a question of principle.

We have already said against this argumentation that *uninterrupted schooling* until the age of 19 cannot be regarded as the most rational way to prepare for adult life. We have expressed our preference for *organised alternation between various learning situations.* But such alternation could also be incorporated in a system of compulsory education for the 16-19 age group. Everybody could be obliged by law to participate in full-time learning of some kind, leaving it to the individual to choose how much of this time he spends in school or in other publicly accredited institutions of learning like apprenticeship or trainee-programmes.

It seems possible to go a step farther and leave it to the individual to decide when and in which combination of gainful employment, apprenticeship, full-time school, part-time school, evening courses and tele-instruction he prefers to fulfil his obligation to continue education beyond the general 5 to 15 school period. For other, "non-school" institutions it would be then compulsory to deliver to the public authorities certificates of participation in accredited courses, totalling an obligatory minimum of hours. Another version of compulsory education might give the same freedom of combination but ask for certificates testifying graduation or certain minimum achievements. In both cases a prolongation beyond the age limit of 19 could in many cases become necessary.

All these proposals deserve serious further consideration. It can indeed be asked why education is compulsory for children and not for adolescents during the phase before they come legally of age. In a system of compulsory education it seems possible to make allowance for interruptions, alternations and combinations of various kinds. But it must also be asked how young persons can develop a spirit of self-reliance or autonomy regarded as an aim of education if they are kept

compulsorily in the education system until the age of 19. Furthermore, there is the question of motivation for learning. Compulsion may mean mere presence or, if achievement certificates are required, it may mean a prolongation of obligatory education far into the twenties.

Principle of equality

Equality of opportunity can mean offering everybody open access to good education and leaving it to the individual to decide what use he makes of the offer. Some people interpret the principle of equality in a different way. They postulate that through educational effort everybody should be led to a minimum level of personal development and competence. Those who are for this concept of equality are often also for compulsion, even if it means a continuation of obligatory education far into adult life. At present, a considerable part of each generation does not even finish the programme of the primary school or the first cycle of secondary education successfully. The realization of equality up to a fixed standard would, therefore, have considerable consequences for the allocation of resources.

But *prolonged compulsion* has also to be examined from the point of view of how it will influence efficiency. We know that *high motivation* is the most important condition for successful learning. Motivation is greatly influenced by the individual and social background of students and teachers, and certainly by curricular conditions. Much can be done in order to maintain a high level of motivation of students — even when compulsion is involved, provided there is sufficient opportunity to exercise free choice within the compulsory school system. But recent experience in obligatory institutions for the 16-19 age group seems to show that the present generation (reaching physical maturity earlier than former generations) is not very much inclined to work efficiently under this condition.

One negative consequence of introducing compulsory education for this age group would probably be a large increase in disciplinary difficulties. As long as participation is voluntary the student can leave if he feels that he cannot bear the situation any more, and the school can also show him the door. If compulsion prevailed, friction could not be solved in this way. Schools would be forced to use severe disciplinary measures. This would contradict the aim of educating for voluntary co-operation. It might imply a move backwards to the classroom atmosphere of former centuries.

Weighing up all these pros and cons we come to the conclusion that education for the 16-19 age group should not be made compulsory. The aim of educating as many of the age group as well and as long as possible should be reached by means which are fully appropriate to the preparation for the expected adult roles in the democracies of Western Europe.

By arguing for *voluntary education* we assume that everything in our means will be done to make school curricula more attractive, to offer students more rights to participate in curricular planning and to introduce practical work between periods of school learning as a normal feature of educational organisation.

For those deciding against staying in school, or not accepted by schools, the general aims of education should be secured in the following ways :

— Offer of publicly financed part-time and evening education including correspondence and television courses ;

— Obligation of employers to give paid release for day-time courses ;

— Offer of public financial support for courses organized by employers and supervised by public bodies ;

— Offer of public agencies for information on educational opportunities and for guidance ;

— Public guaranty of quality standards in apprenticeship indenture ;

— Public guaranty of recurrent education opportunities beyond the age of 19.

Co-operation of non-school agencies

Such a programme depends heavily upon the co-operation of non-school agencies. The economist is particularly interested in the question whether, and under which conditions, such co-operation can be expected from private business. He knows about the prognosis that the "industrial society", ruled by the fetishism of production growth, will be succeeded by an educational society characterized by orientation towards immaterial wealth. Private firms now dominated by their concern to increase profits by marketing products would then be less inclined to see their employees mainly as factors of production. They could then allocate more resources to polyvalent education because co-operation and competition in the field of education would be part of their normal activity.

At present, this seems to be a vision of alternatives and possibilities far away in the future. However,

the decision concerning which direction to take cannot be further delayed, if we accept that the whole age group has to be prepared for self-reliance, for personal judgement, for rational and co-operative behaviour, for vocational competence and for ability to make use of facilities for continued education. These are the declared goals of educational policy in most countries of Western Europe. Refusal to decide how to set about achieving these goals would cause high social costs. Should private business refuse to take up the role of a controlled co-agent in educating the age group, the prolongation of compulsory education in schools may become unavoidable.

Private business will argue that this implies foregoing the possibility of getting high production output from those young people who have decided not to continue school after the compulsory period and that it would mean considerable costs for guidance personnel, courses and educational facilities. This is true ; there is no cheap way to good education. The net cost per annum of an apprentice is today in many cases higher than the cost of a student in a grammar school. Giving release for day-time courses, offering guidance and paying in addition some compensation for partaking in production work could mean that even the employment of young people for unskilled work would result for a certain time in net costs for the employer.

Once the goal of providing an *adequate preparation for adulthood* for all is generally accepted, the total allocation of resources for the education of the age group is bound to increase. This is certainly true in the case of a prolongation of compulsory school. But it is also true in the case of a system offering an option between education in school or a combination of school and practical learning. Education must then be organized in such a way that these two types can compete, offering alternative programmes of equal rank. Our thesis is that such a system would not be less expensive but very probably more efficient.

Activating the potential of private firms and organisations for the education of the age group implies new ways of financing. In the case of schools under the direction of public authorities financing from public budgets can be regarded as the most rational way. But in the case of educational facilities and programmes operated by private agencies the costs of investment and running expenses can be treated like the other costs of these firms or organisations. These facilities and programmes are financed by the prices of goods and services sold, or by membership dues and other contributions paid to organisations.

If the educational activities were to serve exclusively or mainly to qualify young people for the benefit of private agencies, this way of financing their costs would be regarded as adequate. But educational programmes of this kind are hardly compatible with the general goal of preparing adequately the age group for the manifold tasks of adulthood. Furthermore, it generally cannot be assumed that the private agency investing in the education of a young person will have all the benefit for itself. In any case, there are external benefits and they grow in relation with the polyvalence of the education received. And finally, no person is bound to stay with the firm or organisation which financed part of his education.

Under conditions of free enterprise and free migration one cannot, therefore, expect private agencies to be generally willing to bear the full financial responsibility for educational activities which have large external effects. In order to gain their co-operation in educating the age group, a system of parafiscal collective financing is recommended, its general principle being to equalize the burden of financing education between private agencies participating in the scheme and to motivate them for good educational efforts. The system has to be introduced by law. The private agencies participating have to pay special levies into a fund amounting, for example, to a percentage of the total of wages and salaries. They can reclaim repayments from the fund depending on the quantity and quality of their educational effort. It is assumed that once they have made a financial contribution to the fund, it is in their interest to get payments from it and, in order to receive payments, they have to submit proof of their educational efforts.

There are many ways of modifying this simple basic scheme of a fund system. The State may, for instance, contribute to the fund and thereby express the public interest in the high external benefits of education operated by private agencies. Payments into the fund by private agencies may be made in proportion to the taxes on profits, rather than in proportion to the sum of wages and salaries.

The results of a funded scheme very much depend on the bodies regulating the fund activities and supervising the curricula and quality standards. Besides public education and labour authorities, employers' associations and trade unions may have seats and votes in the governing bodies.

It seems advisable to study the experiences in countries which have been operating fund systems

for a long period, especially France and Great Britain. Our assumption is that the basic idea of these systems has a good chance of being accepted by all countries of Western Europe. It offers a workable solution to the problems of how to obtain and organize the co-operation of private business in educational activities. Once it is accepted that this co-operation is helpful, fund financing seems to offer the most adequate and rational way of achieving good educ[illegible]n for the whole age group.

Summing up and conclusions of the Sèvres Symposium

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It is a hazardous task to attempt to sum up in a few pages the wealth and diversity of ideas which emerged from this Symposium. I shall therefore do no more than draw attention to the salient points and general trends of the speeches, reproduced in full above, points and trends which were noted and developed in the working parties' conclusions. I propose to offer an overview rather than to summarize in turn the lectures of H. Janne, S. Henrysson, F. Edding, J. Wrigley and L. Geminard. The tenor was, of course, in each case original and bore the stamp of the speaker's interests and special knowledge. But there were very many points in common which make it easier to sum up and make it possible to group topics in such a way as to provide a more effective overview of the problem.

It would have been unrealistic to expect a fourday meeting to produce conclusions containing firm, coherent and detailed proposals, nor did the organisers have this in mind. Their object was to take stock, at European level, of the broad common or divergent principles which should guide the educational policy of States in respect of this age group so as to take account of current contributions of the human sciences (psychology, sociology and economics). The gathering was intended to be a mixed one, comprising theorists, researchers and educational administrators. It so happened that the governments sent more administrators than researchers, but the standard of the speakers and their discussions with the other participants made up for this. There was a broad consensus of opinion regarding most of the points raised, and it was recognised that differing views were due to uncertainties which perhaps only scientific research would be able to elucidate.

The problems

First and foremost, everyone agreed that the education system was passing through a state of crisis at the level under review. Well-meaning people might conclude that this belief was the result of vexation or even ill-feeling. Not all of those present shared this view. The education of the 16-19 age group is passing through a crisis, albeit in widely varying degrees of gravity, in all the European countries. The mere fact that there is talk of an education problem at that age is significant in that, hitherto, young people in this age group have been regarded as no longer the concern of the education system, most of them already being at work.

But nowadays in most of our countries we are faced with the problem of extending compulsory schooling up to the age of 18. This is a general economic factor bound up with industrialisation : greater need of skilled ability and the increasingly abstract nature of all the training require a longer period of general compulsory education. It is, indeed, becoming more and more obvious that this extension of initial training is no more than a prelude to permanent training — or recurrent education — made essential by the mobility of labour and the rapid development of scientific and technical knowledge. The very existence of this new approach is profoundly changing the problem of the possible extension of initial training.

The traditional education system is responding to this general need in an inadequate, unsuitable and haphazard manner. In most of our countries qualifications are not only inadequate but also unsuitable. We are witnessing the beginning of unemployment among university graduates whilst industry and commerce look in vain for people with the ability to fill the new posts becoming available. In these circumstances the growth of the school population seems likely to aggravate the problem rather than solve it.

At the same time it is found, particularly in countries where mass traditional education already

obtains, that schools are functioning with a growing inaptitude engendering at best boredom and lack of interest and more and more frequently, in large towns, unrest and violent protest.

The institutional answer to these pathological phenomena cannot depend on improvisation and rule-of-thumb methods. It is becoming increasingly clear that a coherent education policy cannot be drawn up in the dark and the politicians responsible must be able to avail themselves of the contributions of objective knowledge. Where these are inadequate, research must be organised and financed.

The contribution of the basic sciences

The introductory addresses delivered by Janne, Henrysson, Edding, Wrigley and Geminard highlighted several established essential factors which governments should take into account in formulating their education policies.

Psychologically, the 16-19 age group is not uniform. A differential study of the characteristics of individuals in this age group reveals many inherent differences due to sex, socio-vocational origins and biological maturity. It is, however, possible to discuss common trends which can be borne out by statistics.

In most cases, biological development has ended and, indeed, almost all young people of this age are sexually mature and have completed, or are completing, their physical growth. From that point of view the crisis of puberty is over and the period of maximum unrest takes place between the ages of 12 and 15, that is to say, at the end of the preceding school cycle. The period we are considering is one of transition with the young person gradually preparing himself for his adult roles. Thus the psychological difficulties encountered at this age appear to derive mainly from social conditions. A comparison with the psychology of young people integrated into less sophisticated rural societies reveals that the problems met with in our countries at this age are in essence cultural and have their roots mainly in the far-reaching changes that have affected the family and living conditions.

Consequently it is, then, above all to *sociology and psycho-sociology* that we must turn to help us understand the phenomena of unrest and maladjustment.

From that point of view, the development of our respective societies is characterised by a breakdown in the consensus among the different kinds of milieux in which the young person is called upon to live, in particular, among the family, the school and the peer groups, the importance of which becomes considerable. Let us consider the main characteristics of that breakdown. The traditional family unit has gradually become less important as a framework for information and preparation for social life. The father and mother formerly served as models of adaptation to the social and vocational milieu : their precise and immedately perceptible social activities provided the subconscious basis of the child's personality. They were the main source of information and the incarnation of social values. Industrial and urban society leads to the father, and often the mother, disappearing from the family circle. Mass media and the growing speed of the progress of knowledge often make the adult appear less well informed than the child himself. This change in the family background is consequently leading to ignorance of social and vocational realities and is giving rise to a situation of insecurity vis-à-vis the adult world.

At the same time, extension of compulsory education prolongs the state of economic subordination of young people who are biologically and sexually adult ; as a result, this feeling of insecurity is coupled with a demand for independence which cannot find satisfaction in established social contexts.

Correlatively the concentration of young people, as a joint outcome of population growth and urbanisation, makes the 16-19 age group a social class with its own culture and its economic reality as a consumer. This group and its culture, though recognised by the economic system, are not accepted by adult society as institutional realities : hence the feeling of isolation and, at the same time, of misunderstood originality and the aggressiveness it engenders. The predominant features of these young people are insecurity, anguish and a need of independence and self assertion.

From a more general point of view, *sociological and economic studies* show, together with the need for increased advanced general training, the necessity to take account, in such training, of the mobility of labour which makes traditional training for jobs impossible and calls for a new definition of "functions" requiring flexible general training adaptable to the continual economic and technological changes in our society.

They also reveal how conservative socio-vocational ideas about education are and how the education system continues to function as a system of social conservation opposing any true democratisation.

That is why it no longer seems that the cost of education ought to be estimated in the light of economic development alone. Economists are becoming increasingly aware that the aim must be not so much to adapt the education system to the needs of an autonomous economy as to adapt the economic system to meet the requirements of education arising out of the ethical and philosophical demands of a happier and more equitable democratic society.

What, then, in the face of these psychological, social, economic and ethical demands, are the characteristics of contemporary European education systems ? Professor Janne rightly drew attention to the severe criticism made at Pont-à-Mousson on the occasion of the Council of Europe Symposium in April 1972 (1) : "A particular type of school was blamed for most of the difficulties encountered in further education. Establishments of this kind were seen, experienced and founded as :

— places cut off from life and the environment ;
— silent places, stifling any inclination for personal expression and hostile to communication between persons ;
— discriminatory places, favouring the "noble" branches of learning ;
— places characterised by conformism, reproducing traditional patterns and values and opposed to creativity and any expression of dissenting opinion ;
— irresponsible places, excluding any form of co-operative control over common resources ;
— places demanding passivity and submission, where pupils had no say as regards the subject-matter, methods, duration or organisation of studies ;
— lastly, places associated with repeated failure at the end of a guidance process invariably amounting to rejection."

The recommendations

Whilst this long quotation will be found in Professor Janne's paper, it seemed to me essential to include it in my report, unlike the facts and trends that derive from basic knowledge. The recommendations adopted by the study groups at the Sèvres Symposium form a natural contrast to this severe description which, however, was recognised as accurate by all.

1 - *These particular recommendations rest on general principles* already established in the light of psychological, sociological and economic requirements.

— States must endeavour, according to their means, to provide maximum training for as many citizens as possible. That means, concretely, that efforts must be made for the benefit of the young people who, at present, do not have access to the school system.

— The organisation, content and methods of that training must be such as to prepare the way for permanent training of which it is, after all, but the first element.

— The purpose of the training must be to develop practical skills which are transferable and of use in socio-vocational activities. This means abandoning the idea of providing no more than a free general education and of imparting purely academic and theoretical knowledge.

— Young people undergoing training should be given as much responsibility and independence as is compatible with that training.

In the light of these general principles the experts, meeting in two specialised working parties, elaborated the following recommendations :

2 - *Institutions and their structure*

— Extension of training. Training should be extended not by prolonging the period of compulsory schooling, but by gradually introducing, within the limits of available economic resources, continuous training linked to real work.
Any compulsion should concern the financing of this training and the inclusion of training time in paid work hours.

In that recommendation the experts particularly wished to insist on the inadequate nature, for the age group under study, of generalised full-time schooling. Such full-time schooling as exists should, on the contrary, be adapted to the requirements of responsibility and of fundamentally recognised autonomy.

— The general aims of and the legal responsibility for this training must remain in the hands of the State.

In making this recommendation the group of experts wished particularly to warn against false interpretation of the previous recommendation which might convey the impression that entire responsibility for training should be entrusted to commerce and industry. The concern to let the young assume responsibility and to make training

(1) Doc. CCC/EGT (72) 1 (p. 35).

realistic and useful must not be allowed to lessen the general objectives of citizen training or those inherent in democracy. At the same time, we must steer clear of the reef of short-term objectives that do not take account of the foreseeable and desirable development of social and employment structures.

— The current school system must be organised in such a way as to make it possible :

- for persons in employment to enter the system for additional training whenever they so wish ;
- for persons within the system to leave it at any level and be able to fit effectively into the economic system. This supposes that curricula include for all a training for practical life and an introduction to economic realities.

The recommendation is very important in that it aims to meet the young trainee's need for independence and at the same time the desired link between the school and the economic systems. The present school system, preoccupied by academic subject matters, is in many countries turning out maladjusted trainees, poorly qualified to face the realities of the working world and responsible life. The university often prolongs this poor preparation, which ought to be avoided from the beginning of the upper cycle of secondary education.

— Schools at this age level must be multi-purpose so as to allow of maximum flexibility in guidance having regard to the interests and varying aptitudes of the pupils and to their evolution.

— The schools must be given very wide autonomy in the spheres of organisation, curricula and examinations so as to permit close association with the surrounding community (parents, business, local authorities). This is, indeed, essential if the previous recommendations are to be put into effect. A school completely cut off from the community must in its isolation inevitably function in a purely theoretical way, leading to economic imbalance and the loss of pupil interest.

— In order that there may be personal commitment in the training process on the part of students, education must assign a predominant place, alongside a minimum common core of various levels :

- to optional subjects that allow of specialisation in theoretical, practical or artistic sectors ;
- to indepent work, by the individual or in small groups, which ought to take up at least 50 % of the timetable ;
- to self-directed leisure activities.

— Teaching aids — films, television, teaching machines — must be regarded as facilities at the service of this education and not as ends in themselves imposing constraint upon the system of education.

— Technical education provided in schools, whether theoretical or vocational, must not be separated from general education ; rather must it be regarded as one of several options.

— An advisory, information and guidance service must be instituted or developed for schools and business enterprises.

3 - *Curricula*

— It is not for university specialists in traditional subjects to determine by themselves curricula. Teachers, business and students must be included in specific curricular studies.

— Subjects studied must prepare the pupil for both university studies and entry into working life. That is why in determining those subjects account must be taken of :

- general educational aims ;
- economic requirements, determined not on the basis of a study of jobs which are no longer stable, but in the light of general functions obtaining in various sectors of economic life (knowledge and skills common to various jobs) ; and
- the potential intellectual ability and personal aptitudes and interests of the individual pupil.

— Curricula should therefore embrace organic inter-disciplinary sectors and not consist of a medley of separate subjects that are ends in themselves. This opens up a wide field of exploration, and inter-disciplinary co-ordination based on individual subjects is just one, perhaps unsatisfactory certainly inadequate, line of approach.

4 - *Examinations*

— In the light of the retroactive effect that final examinations have on the system of education, the experts emphasized that it was vain to hope for innovation in an education system so long as examinations remained unchanged. They found that the recommendations of the 1967 Conference of European Ministers of Education had had no effect in this respect.

— The nature of examinations must be reconsidered in such a way as to make possible local initiative which alone can promote the development of optional courses and independent work.

— For the same reason, examinations should be concerned with aptitudes and intellectual ability, not with factual knowledge. The use of open-book examinations should be generalized.

— Examinations should be devised in such a way as to facilitate the introduction of recurrent training. The units/credits system should be generalized ; wherever possible continuous assessment should supersede final examinations.

— Students should be allowed to take part in assessments since self-evaluation is a vital factor in independence and individual guidance.

5 - *Teacher training*

The Symposium recalled that no improvement in the education system was possible unless arrangements for permanent teacher training were introduced.

6 - *Research*

The participants were unanimous in finding that there remain numerous obscurities which result from these trends. They accordingly emphasized the need for the responsible authorities to regard educational research as an important part of the education system, since in the absence of such research any decisions taken must be speculative. The following items were deemed to be those most deserving of study :

— Devising and experimenting model curricula ;

— Preparation of multi-disciplinary and transdisciplinary curricula as indicated above ;

— A genuine and comparative evaluation of multipurpose establishment structures ;

— Precise exploration, in theory and subsequently in practice, of vocational training as the core and basic feature of general culture, in co-operation with business and industry ;

— Determining and trying out of examinations based on a system of units/credits.

7 - *The cost of education*

The participants in the Symposium all agreed that the cost of education was of importance in any attempt to improve the education system, but that in assessing it allowance had to be made for the fact that the current system was inadequate to meet social and economic needs. The welfare of the people and the smooth functioning of institutions should take precedence over the immediate demands of economic growth alone. Education is not the servant of economic growth, on the contrary, economic growth must take account of the needs of Education.

These, then, are the recommendations that the participants in the Sèvres Symposium judged that they might make at the end of their deliberations.

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* Out of print.