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ABSTRACT

This publication contains materials from a conference to discuss modular approaches to curriculum design. The materials from the United States and five other countries address both national skills standards and modular systems of training delivery. An introduction provides brief summaries of the conference materials and the agenda. "National Competency Standards: Policy and Guidelines," prepared by Australia's National Training Board, is a presentation of the system of national competency standards toward which the country is moving. "Modularization and Progression: Issues in the 14-19 Curriculum" (Ken Spours and others) focuses on efforts to extend beyond fragmented modular curriculum developments toward modular systems based on national standards and used as a way to alter students' progression through a range of continuous learning opportunities. "Vocational Education and Training in Denmark" discusses secondary vocational education and the relevance of modularization in adult vocational education and describes the Merkonom and Teknomom study programs, after-hours modular upgrading courses for technical and managerial employees. "The Effectiveness of New Curriculum Models for Initial Vocational Training: Modularization" (Elly de Bruijn) focuses on modularization within senior secondary vocational education and in the apprenticeship program in the Netherlands. "Modulation" (Donald Mack) and "The Effectiveness of New Curricular Models for Initial Vocational Training: Modularization" (Cathy Howieson) describe and analyze the Scottish Action Plan, which has created 3,000 modules that cover all occupational areas and are a part of a national system of vocational preparation. Four documents deal with the U.S. experience: (1) "The Promise of Skill Certification for Improving Occupational Training in America" (Robert Glover), a paper arguing for the creation of a unified national system of industry-led skill standards along with a voluntary process of skill assessment and certification; (2) testimony of Sue Berryman on the wisdom of creating a National Board on Workforce Skills as has been proposed in recently introduced federal legislation; (3) a mailing from the U.S. Department of Labor that explains its and the Department of Education's interest in and strategy for moving toward national industry-specific skill standards; and (4) sections of the "High Skills, Competitive Workforce Act of 1991" introduced by Senator Edward Kennedy. (YLB)

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MODULAR TRAINING SYSTEMS AND STRATEGIES:

An International Meeting

co-sponsored by

the American Society for Training and Development,
the Center on Wisconsin Strategy,
and Jobs for the Future

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Washington, D.C. • May 11-12, 1992

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Overview

1

Australia

2

Britain

3

Denmark

4

The Netherlands

5

Scotland

6

United States

7

8

MODULAR TRAINING SYSTEMS AND STRATEGIES: AN INTERNATIONAL MEETING

INTRODUCTION TO THE MEETING AND THE RESOURCE MATERIALS

Introduction: The challenges we face

In the United States today, a consensus has formed around the growing importance of a highly-skilled workforce--and the inadequacy of our nation's fragmented and inefficient "non-system" of training. It is by now a common argument across the political spectrum that for U.S. firms to survive in the global marketplace and for the U.S. economy to sustain high wages, we must pursue a high skill strategy.

Yet, the existing set of education and training institutions and the political and social structures in which they are embedded are not well-suited to the task. If the U.S. is to pursue a high skill strategy, we will need to develop comprehensive and comprehensible learning systems that are flexible and responsive to both industry and individual needs. The system will have to be driven not by the institutional logic of schools, colleges, and other training providers but rather by the demands of employers and of individuals. Success will have to be measured not in terms of enrollments but in terms of mastery of skills, results in the labor market, and impacts on employer performance.

This will require significant changes in the ways that academic and vocational learning opportunities are organized, delivered, and credentialled in this country. There is little disagreement that it will require building some kind of national system for occupational training where one does not now exist. This new system will demand much greater integration of academic and vocational learning paths and certification methods.

The United States is obviously not the only country grappling with this challenge. As all industrial nations adapt to the new rules of global economic competition, they find themselves rethinking the political and institutional foundations of their education and training systems. The following excerpts from publications from other nations sound remarkably familiar:

Australia: High productivity and quality in goods and services is dependent in large measure on a nation's ability to produce both well-trained workers and organizations which enable employees in all areas and levels of the organization to contribute to their potential. Australia's achievement in both these areas falls short of best world practice.

The Netherlands: [The government's] two main concerns are: restructuring the vocational training system in a coherent and flexible system for vocational education and training for youngsters and adults, employed and unemployed; secondly, making courses more related and responsive to (changes within) occupational practice.

Britain: [The debate now] centres upon the relationship between the quality of post-[secondary] participation, the nature of qualifications, and the type of economy and society we need to develop for the future. It points to the need for overarching capabilities, new types of knowledge and skill and a system which promotes the 'learning organization.'

The debate is largely the same everywhere. How can the existing system, whatever its current characteristics, be reformed or restructured so that:

- 1) industry's skill needs are more clearly articulated to training providers;
- 2) providers are held more accountable to train to those needs; and
- 3) individuals who pursue training can make knowledgeable judgments about the best way for them to master skills they actually need in the workplace and to earn broadly recognized and valued credentials?

The basic building blocks specified in each country are also the same:

- 1) national competency standards set by employers and labor;
- 2) a coherent, transparent, effective delivery system;
- 3) strategies for assessing both individual skill mastery and provider effectiveness; and
- 4) recognized mechanisms for accrediting learning programs and certifying individual performance.

But in important ways that place us at a disadvantage relative to many of our international competitors, the U.S. is different. Many countries are much farther along than we are. They have or are moving rapidly toward industry-based, nationally-recognized occupational skill standards. And they have or are moving systematically toward increasingly flexible ways of organizing the provision of training for the benefit of firms and individuals.

There are numerous intertwined reasons why we lag behind. The U.S. federal system, with its multiple layers of governmental authority, creates serious fragmentation of political responsibility for education and training. Coordination is difficult; countless incompatible structures and frameworks exist for administering, accrediting, and credentialing learning. In addition, the social partners that drive the creation and renewal of national systems in many countries—organized into strong, unified employer organizations and labor unions representing the majority of firms and workers—are in this country limited in their reach and ability to forge a national consensus. Even our individualistic cultural values militate against efforts to move toward structured national systems and standards.

As a result, as Bob Glover notes in his paper reproduced for this conference, all other advanced industrial nations have developed systematic approaches to foster training and skill certification--while the U.S. is only beginning to move gingerly in that direction. That movement is constrained by the institutional and cultural realities noted above. Significant progress toward a national training system that promotes high skills and high performance must begin from these realities and construct a uniquely American set of solutions.

Why this meeting now?

The fact of our "late development" both occasions this meeting and informs the way it has been organized. In the U.S. today, the question of how to create a coherent, flexible, efficient education and training system is not simply of academic interest. It has emerged on the policy agenda at the national and state levels.

The federal Departments of Labor and Education are experimenting with ways to develop industry-driven occupational skill standards that would be recognized nationally. On the Hill, members of Congress representing a range of political affiliations and views are crafting and introducing legislation designed to move the U.S. toward more national, integrated approaches to the education and training of young people and adult workers, both employed and unemployed. Recent federal legislation, including the reauthorization of the Perkins Vocational Education Act, has stimulated the specification of skill standards for federally-funded programs. States concerned with accountability and with the high cost of uncoordinated and fragmented training provision are looking for ways to weave existing efforts into more coherent packages. In the private sector, there is a growing realization that a unified, national system of industry-based skill standards and certifications can be beneficial to employers. In the education sphere, trends in the restructuring of K-12 education and of post-secondary technical and vocational education lead in the same direction.

The U.S. stands at an early stage of what promises to be a long and complex process of restructuring the way we organize and deliver skill development opportunities. Now seems a good time to take a close look at what some nations that are a few steps ahead of us have learned from their experience--and to integrate this experience into our own efforts to craft an American alternative. That is the purpose of this meeting.

For this reason, we have invited experts from five different countries to explore with us the significance of their national experiences to our own fledgling efforts. With case study materials from Australia, Britain, Denmark, the Netherlands, and Scotland, we can ground our own deliberations in the realities of best practice around the world. We can use their successes, false starts, quandaries,

and difficult choices to inform our own efforts to build a training system that works for us.

Attendees from the U.S. reflect the cross-section of interests that must be represented and engaged as we move forward on this agenda. As you can see from the participants' list, we have gathered leaders from industry and organized labor, from government at the federal and state levels, from education at the secondary and post-secondary levels, and from the "independent sector" of universities, intermediary organizations and foundations. With these various perspectives represented, we should be able to have a far-reaching, realistic discussion that begins from an acknowledgement of U.S. institutional realities.

Related issues: national standards and modular approaches to curriculum

We initially called this meeting to provide an opportunity to learn about and discuss whether modular approaches to curriculum design being developed in a number of countries might hold the key to creating a flexible and learner-centered, competency-based training system. We felt that modularization--defined as the designation of a set number (and, usually, sequence) of stand-alone curricular units as the required elements of a training program yielding a recognized, portable credential of skill mastery--is an important development worth exploring further.

Some of the countries which have turned to modular strategies--including Scotland, Australia, and Britain--have a lot more in common with the U.S. than do nations such as Germany and Austria, where centralized negotiations between the social partners and government are commonplace. In a country where the institutional fabric is fragmented and weak, modularization might be a lever for rationalization and coordination that serves the needs of employers, protects the interests of individuals, and expands the availability of training that leading to recognized credentials.

Yet an exploration of the potential of modular training systems must begin with a prior discussion. Modularization is only relevant and meaningful in the context of a coherent system of skill standards and assessment acceptable to employers. Modularization may hold out the promise of a flexible training system with clearly-defined components that can be delivered by any number of providers--on the job, at school, in the community etc. But the definition of those components and their sequences must be preceded by definition of competencies toward which individuals are being trained. And they must be part of a system that incorporates assessment, accreditation, and certification of occupational skill mastery. As one British observer has concluded, "A modular system is not an end in itself, but a means to achieve reform and an effective, efficient qualifications [i.e., standards] system."

For this reason, this meeting is structured to place modularization in its broader context. The meeting begins with a discussion of national systems of skill certification and what we might learn from international experience. Then we turn to modularization--to the structure and content of the training delivery system.

Each of these Monday sessions will have a similar structure: a presentation of the general issues and questions raised by the readings; then a few pointed presentations from our international experts; and finally an informal, open discussion of these cases from various U.S. perspectives.

On Tuesday, we will delve deeper into both topics--national skill standards and modular approaches to training delivery--through an extended discussion of principles that should guide system-building efforts in the U.S. and of the design implications of those principles.

Our goals for the meeting

We see this gathering as a learning opportunity. It is a day and a half of informal discussion, of off-the-record puzzling through on complex and difficult issues. We see it as a vehicle for sharpening our questions and of pushing beyond initial hunches. As such, this is a participatory meeting that will require active engagement rather than passive observation from participants.

The organizers of this meeting do not claim great expertise and knowledge on these issues. Rather, we have tried to create an opportunity for open interaction and exchange. We of course hope that the lessons learned and the information presented will ripple out through the ongoing work of each of the participants. But we do not have any greater expectation than this. We will prepare a short report on the discussions at this meeting; but we do not expect consensus or a public statement of principles to emerge. This is a time for quiet but frank discussion.

A guide to the conference reading materials

The binder of readings that you have received contains materials from the U.S. and five other countries on both national skills standards and modular systems of training delivery. We encourage you to read as many of the papers and reports as possible before the meeting begins. These readings are rich in both description and analysis. They provide significant background information; they focus on the difficult questions raised by the experience of each nation in its reform attempts; and they generate design principles we may want to discuss in some depth.

Of course, we know you are all busy people. With this in mind, we have prepared the following brief summaries of the conference materials.

While the meeting itself is divided into discussions of skill standards and of modularization respectively, for reasons of simplicity the readings are organized by country. These readings are not exhaustive. They are more instructive for some countries than others. Some additional materials are likely to be distributed at the meeting itself. We also anticipate a follow-up mailing of additional papers.

Australia: The reading on Australia is a straightforward and instructive presentation of the system of national competency standards toward which the country is moving. Prepared by the National Training Board, an institution created by the various levels of federated government in Australia and governed by a tripartite Board of Directors, the report articulates the Board's broad policy for developing a consistent national framework for developing competency standards "by industrial parties based on industrial needs."

The report sees several interrelated components as essential to achieving an effective, efficient, responsive and coherent education and training system: competency standards; development of training objectives and curricula; accreditation of training programs; delivery by public and private sector providers; assessment of both prior learning and of mastery of competencies; certification of mastery; monitoring and verification of system outcomes and quality; review of standards and curricula for continual updating to meet industry needs.

The National Training Board advocates the establishment of national core competency standards for both occupations and industries. The standards framework consists of eight competency levels which are the reference points for the development and recognition of competency standards and that will allow for comparison of vocational training and qualifications across industries. The eight levels start with the competencies of a competent operative or service sector worker with little autonomy and end at the level of a competent senior professional or manager. Competencies themselves, worked out by the industrial parties and approved by the Board, must be broad-based, related to realistic workplace practices, and understandable to trainers, supervisors and potential employers.

The report includes specific examples of sample competency standards, articulates the principles that guide the system, and diagrams the administrative structure of the system.

Australia has some experience with modularization of training courses and the National TAFE Research Centre is promoting the establishment of national training modules for key areas of industry.

Britain: The British experience is represented by a paper by Ken Spours of the Education Department Inspectorate, who is joining us at the meeting. His paper, written in 1989, focuses on efforts to extend beyond fragmented modular curriculum developments toward modular systems that are based on national standards and are used as a way to alter the progression of students through a range of continuous learning opportunities. In Britain, the discussion of modularization is primarily focused on the youth population (ages 14-19) and mirrors much of the discussion in the U.S. about TechPrep and the reform of vocational education.

Spours emphasizes the potential of modularization to facilitate movement across a number of divisions and transitions: the division between academic and vocational learning; the transition from compulsory education to post-secondary learning; and the division between learning at different sites (schools, colleges, and workplaces). His paper bewilders the American reader—as would any attempt by an American author to summarize the fragmented, overlapping and uncoordinated "nonsystem" in the U.S.

The section on the National Council on Vocational Qualifications (NCVQ), a flawed attempt to bring order into the area of vocational qualifications that focuses on accrediting work-based competencies, highlights the tensions involved in employer-driven systems. The NVQ system appears to focus on narrow work skills, give short shrift to the kinds of broad cognitive skills that world-class employers say they need, and be inadequately concerned about progression to higher levels of skill and learning.

In a recent paper not reproduced here, Spours focuses on the decision of the British government to maintain a "dual track system of qualifications" between academic and vocational education. He raises the fear that all the various reform efforts in Britain are reinforcing a system that has been dominated by elite academic qualifications and devalued vocational education.

Denmark: In Denmark, more than half of a youth cohort enroll in basic vocational education. This system combines practical training in a firm with theoretical and practical training at a technical college. Unlike Germany's apprenticeship system where some time each week is spent at school and the remainder at a worksite, Danish young people spend several months at a worksite and then several months at school.

From the materials we have collected, it is difficult to know how important national skill standards are in Denmark. It appears, though this is conjecture, that there is a greater focus on joint construction by employers and trade unions of vocational training curricula than on setting benchmarks and skill standards. Trade committees "decide the structure and content of the actual education." This is a different strategy than establishing the standards and providing more leeway in the construction of specific curricula.

Modularization in Denmark is relevant in the arena of adult vocational education rather than in the apprenticeship system. Adult vocational training programs are delivered by the "AMU system." This system offers approximately 1800 different education plans, one-third for semi-skilled workers and two-thirds for further education of skilled workers. Courses are modules of three weeks duration. Courses in the same subject are offered at different levels of complexity and challenge. Each module is individually certified. Individual workers choose to take the modules they desire. Some courses require a set sequence of modules. The AMU system is beginning to incorporate modules on less narrow subjects such as cooperation and quality-consciousness.

The Merkonom and Teknom study programs described in the materials included here are after-hours, modular upgrade training courses for technical and managerial employees.

The Netherlands: There is experience with modularization in the Netherlands in both the apprenticeship system and the post-compulsory vocational education system. In the apprenticeship system, clusters of modules are designed to be complete courses that are then accredited by the social partners (organized in 31 different industrial bodies) and by the Ministry of Education and Science. In vocational education, modularization has been a wholly school-based effort: no employer or employee organizations were systematically involved.

Modularization is part of a national strategy to guarantee a minimum, nationally recognized standards of basic competencies. Students are expected to complete at least a certain number of modules to reach this minimum standard.

In the Netherlands, modularization of courses is tied to creation of training programs that are very responsive to industry needs. Course definition begins with job task analysis of people working in the field. Clusters of activities are grouped into categories as part of the job profile. Courses are designed that teach to these job profiles.

Elly de Bruijn notes a serious problem with this strategy of modularization. Too often, the profile that is created is a narrow task profile rather than a broad job profile. It is concerned with what a person does rather than how s/he does it. The less visible competencies can disappear "among the modules."

There is another challenge. The national government is quite limited in its ability to orchestrate and mandate implementation of modularization--or any other innovation that has to do with organizing and planning the learning process. In the Netherlands, two-thirds of the primary and secondary schools are private, church-related institutions. The authority of the national government is severely circumscribed.

De Bruijn emphasizes certain relevant tensions in the Dutch system. One is the tension between flexibility and quality: how do you create a flexible system of delivering learning that can meet a national set of competency standards? The flexibility goals are: flexibility of choice for individual learners; flexible progression through a set of modules; flexible adjustment of courses to changing occupational practice. The quality goals are: quality learning and teaching; holistic treatment of the competence, rather than narrow splitting up through modules; and the quality of future options opened up to learners in this system. Progression through the system and the risk of fragmentation of training are not easily resolved in this system. Neither is the desire to train critical thinkers in a system geared to the job-specific definitions of employer needs and requirements.

Scotland: Scotland represents perhaps the most developed and flexible system of modular training of all the countries represented in this resource book. The papers by Donald Mack and Cathy Howieson describe and analyze the Scottish Action Plan, which has created 3000 modules covering all occupational areas that are part of an ambitious national system of vocational preparation.

In the mid 1980s, all non-advanced vocational courses for post-compulsory students were reformed. Curriculum shifted from knowledge-based course determined by nationally-set syllabuses to a system of 40 hour modules based on statements of competences. Learning outcomes are specified for each module. Performance criteria are specified. Criterion-referenced assessment is recommended; modules are not graded. Participative, student centered teaching and learning methods are suggested as part of each "module descriptor."

Modules are accredited through the National Certificate. They may be taken by young people in school and by participants in full-time further education; they can also be taken on a part-time basis by full-time adult workers, by those in a government training program or by the unemployed. The National Certificate provides a single, cohesive national framework for a diverse client group. It offers a common basis for curricular planning and for integration of training provision and for progression by individual learners.

The Scottish system is targeted to address three needs: 1) the need to design training on the basis of nationally agreed standards of competence; 2) the concept of core skills common in a wide range of tasks and central to skills transfer; and 3) the desirability of a flexible modular form of delivery to improve participation and bring in new groups of students. The modules are designed by bodies that include representatives of industry, , education, and the Scottish Vocational Education Council.

The comprehensiveness and integration of the Scottish system is impressive. It provides a vision, albeit in a very small country, of how a system of standards and of modules can create a flexible, effective, and efficient training system that

couple national uniformity with local and individual choice. It provides a vision of how many of the critical building blocks we are considering can fit together.

At the same time, this advanced case enables us to focus on a series of difficult challenges facing any nation moving in this direction. These include: integration of this vocational module system with academic higher education; problems with repetition of previous education and training; the institutional barriers posed by training provider schedules and cost consideration; the tension between individual demand for flexibility and employer demand for mandatory sets of modules; the need for extensive staff development.

The two papers reprinted here are worth reading. Both the description and analysis is extremely helpful. In addition, the appendices to the Howieson piece gives concrete examples of module descriptors and lists the general catalogue of modules.

The United States: We have included three documents here, partly for the benefit of our international colleagues. They are: a paper by Bob Glover of the University of Texas arguing for the creation of a unified national system of industry-led skill standards along with a voluntary process of skill assessment and certification. The paper reviews existing American practices and indicates new developments in this arena. Glover concludes with a very helpful set of guidelines for implementing such a system of industry-based assessment and certification of occupational skills in the U.S. These include:

- Assessment and certification that is independent of any training providers and neutral to the method of skill acquisition
- Skill certification scheme that uses a variety of work-relevant assessment instruments
- A system that incorporates multiple levels of mastery
- An emphasis on promotion of broad training and continuous learning
- Benchmarking to the leading edge "high performance work organizations" in the industry
- Voluntary not mandatory participation
- Integration with existing systems of skill assessment and certification in this country
- Provision for continuous upgrading of standards to keep pace with industrial practice.

A second piece is the testimony of Sue Berryman of Columbia University on the wisdom of creating a National Board on Workforce Skills as has been proposed in recently introduced federal legislation. Berryman makes the argument that a National Board could help organize the interests of employers as customers of the K-12 education system, much as the College Board has functioned to make colleges the primary customer of that system today. She advocates for a national board in order to reduce duplication and inefficiencies that would result from a set of separate state boards. She concludes by emphasizing the importance of a

focus on the foundation and generic workplace skills required across occupations and industries, to complement occupation and industry-specific standards and to guard against excessive narrowing of work-related skill training.

Finally, we include two pieces reflecting current activities at the national level: 1) a mailing from the U.S. Department of Labor that explains DoL's and the Department of Education's interest in and strategy for moving toward national industry-specific skill standards; and 2) sections of the "High Skills, Competitive Workforce Act of 1991," introduced by Senator Edward Kennedy.

Conclusion

We hope that this summary of the background to this meeting, its goals and purposes, and the reading materials provided to all participants will help orient you and prepare you for an exciting day and a half of discussion, reflection, and learning. We look forward to seeing you in Washington. And we look forward to learning with and from each one of you.

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Modular Training Systems:
An International Conference

*Monday, May 11 and Tuesday, May 12, 1992
Hotel Anthony, Washington D.C.*



Sponsored by
American Society for Training and Development, Center on Wisconsin Strategy, and
Jobs for the Future

with support from
The German Marshall Fund of the U.S.
and the Joyce Foundation



SUNDAY NIGHT

7:00 p.m. --

Dinner sponsored by German Marshall Fund at home of
Anne Heald

Brief remarks setting stage for next two days

MONDAY MORNING

9:00 a.m. — 12:30 p.m.

National Standard-Setting Frameworks: First session will focus on the challenge of establishing national framework and system of occupational skill standards that integrate workplace and other kinds of learning. This is a prerequisite to discussions of modularization because modularization is only relevant in the context of building a national system of standards and portable credentials.

A. General Principles: What are the key design elements of a national system?

B. Case Studies: What does international experience teach us? Processes and structure in each of several, though not all five, nations represented; challenges they face; pluses and minuses, etc.

C. Implications for U.S.: What are the implications of the international experience for designing a U.S. system of occupational skills standards and credentialing?

1:30 p.m. - 5:00 p.m.

Modularization of Training Systems: The afternoon session will shift our focus to the ways in which modularization of training systems and their curricula can be structured and administered to increase firm and individual flexibility and choice in maintaining and acquiring skills and knowledge. The format is the same as the morning session.

A. General Principles: What are the key design elements of a national system?

B. Case Studies: What does international experience teach us? Process and structure in each of several, though not all five, nations represented; challenges they face; pluses and minuses, etc.

C. Implications for U.S.: What are the implications of international experience for designing a U.S. system of occupational training modules that coordinate workplace and school-based learning?

MONDAY NIGHT

Dinner—most likely each on his/her own

TUESDAY MORNING

8:30 a.m. -- 12:30 p.m.

Toward a National System in the United States: Prospects for Change: The final session will focus specifically on translation of the lessons from Monday's discussions into a strategy for the U.S. We will have short presentations from key U.S. players (e.g. Depts of Education and Labor, industry and labor representatives) and will then proceed to map out both the implications of what we've learned and next steps for a strategy to build a rational, flexible, system of workforce development in the U.S.

12:30 p.m. -- 1:30 p.m.

Lunch and farewells

Modular Training Systems and Strategies

May 11-12, 1992 • Washington, DC

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National Competency Standards

Policy and Guidelines

25



The National Training Board

LTD.

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From the Chairman

Increasing and sustaining the international competitiveness of the Australian economy is central to achievement of the economic, social welfare, environmental and foreign relations aspirations of all Australians.

The need for change is compelling. A key agent for change is to be the establishment of a system for developing and endorsing competency standards for occupations and industries on a national basis.

The agreement by Commonwealth, State and Territory Governments to establish the National Training Board Ltd, with a tripartite Board of Directors, provides for:

- a consistent national framework for developing competency standards by industrial parties based on industry needs
- acceptance by all governments and training authorities of competency standards ratified by the Board as the benchmarks for vocational education, curriculum development, industry training and recognition, and the delivery and accreditation of training
- competency standards endorsed by the Board to be the benchmarks for recognition of skills and qualifications of those trained overseas.

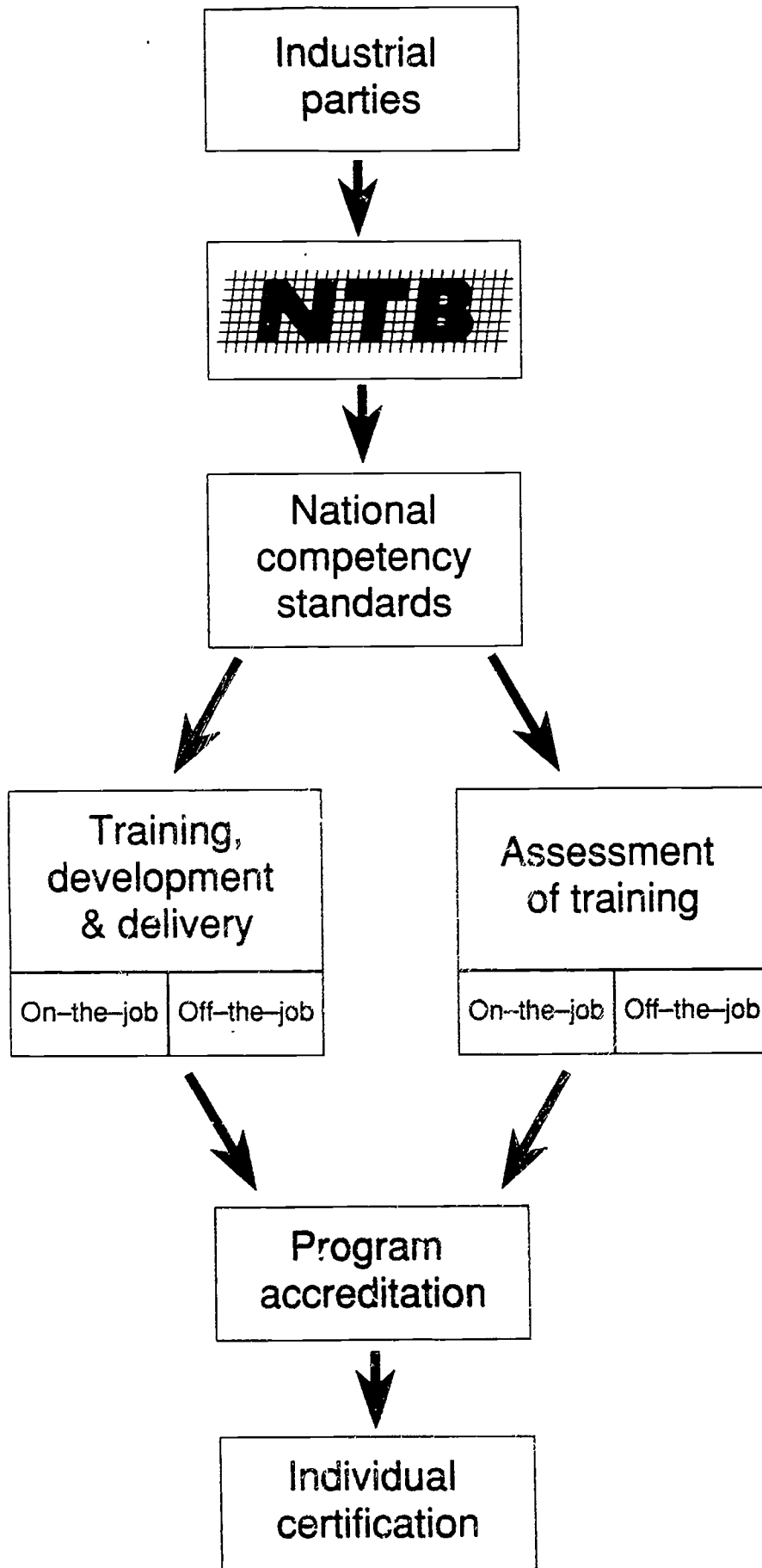
Many responses were received to the Board's July 1990 discussion paper *Setting National Skills Standards*. They have been carefully reviewed and in this publication the Board sets out the broad policy it will follow in endorsing national competency standards and provides guidelines to those involved in developing them.

The Board's role is new and innovative. We are aware that there will be differing views as to the correctness of our approach. However, a start must be made. The policy and the guidelines will require change and refinement over time as the Board and its partners in industry and the training sector benefit from experience and research.


Graham Slee AM
Chairman
National Training Board Ltd
January 1991



NTB



Contents

	PAGE	
1 The Australian Context	4	
2 Introduction to Competency Standards	7	
3 Policy and Priorities	10	
4 The Australian Standards Framework	11	
5 Analysis of Needs	17	
6 The Standards Format	18	
7 Recognition of Competency Standards Bodies	25	
8 Endorsement of Competency Standards	27	

Appendices

A Glossary of Terms	30	
B Functions of the National Training Board	33	
C National Training Board Organisation	34	
D National Training Board and Government Bodies	36	

The national competency standards system that Australia adopts cannot be imported—it must be developed to match Australian needs and contexts. Nevertheless, Australian needs are far from unique and there is much to be learned from overseas approaches and experience. Australia is no less—indeed probably more than other developed economies—in urgent need of reform of its on and off the job approaches to training.

The ability of Australia's economic structure to be internationally competitive is critically dependent on its capacity to be responsive to the challenges and opportunities flowing from changes in markets, materials, technologies and our competitors' performance. There has been widespread recognition in recent years that extensive structural change is needed if these challenges and opportunities are to be successfully tackled. No sector of the economy—whether directly engaged in international trade or not, private or government owned, commercial firms or bureaucracies providing services—is or can be sheltered from the need to match best world practice.

Higher productivity and quality in goods and services is dependent in large measure on a nation's ability to produce both well trained workers and organisations which enable employees in all areas and levels of the organisation to contribute to their potential. Australia's achievement in both these areas falls short of best world practice.

Industry has been slow to recognise the importance of determining what it wants from those who provide vocational training. Industry has also underinvested in the training of its workforce, both off and on the job. Vocational training institutions have also been slow to accept the need for changes to improve the relevance and responsiveness of the training sector. Governments have come to see that the need to build an economy which will be internationally competitive into the next century will not be possible if its foundations continue to be provided separately by nine governments without the coherence obtainable through agreement on objectives, principles and methods. For this reason, they agreed to form the National Training Board.

The first and most important outcome required of the national standards system is that it should lead to an effective, efficient, responsive and coherent national vocational education and training system. When this is achieved, the national standards system will contribute to improving the flexibility of Australia's economic structure. Competency standards for occupations and classifications should not introduce new rigidities which impede the ability of industry to be responsive to change or the ability of training providers to respond to industry needs. It follows that standards must reflect not only industry's current but its future needs—and, since these are not wholly foreseeable, regular, built in review mechanisms are essential.





In Australia the linking of industry restructuring, to meet challenges of international competition, with occupational classification restructuring through the industrial relations system has been the principle driving force for change.

Changes in the majority of other developed countries have also been largely motivated by the need to meet the challenges of the global marketplace. However, the changes are occurring within industrial relations contexts which are quite different from that experienced in Australia.

The Australian context therefore needs to recognise the industrial relations system and realities which have underpinned the move to national competency standards. However, it is important to ensure a flexible approach to modifying and updating standards as these evolve. A rigid approach would cause delays and be counterproductive to achieving international competitiveness.

Thus, while it is important that these standards should closely relate to and be referred to in industrial awards or agreements determined by industrial tribunals, it is equally important that they should not be incorporated in them. The number of occupational and industry standard levels in any industry should be determined by sound analysis of the specific performance outcomes that are required, not merely by the number of occupational classifications that have resulted from negotiations between the industrial partners.

It is important also that the Australian system encompasses the work of the National Office of Overseas Skills Recognition (NOOSR) which is encouraging the development of competency standards in the professions. Some awards and industrial agreements encompass professional occupations. Career paths from non-professional through professional grades are an outcome sought from industrial award restructuring. Greater national coherence and consistency in articulation between all levels of study and training is critical to attainment of the prime outcome required of the standards system.

In introducing national standards, far reaching agendas for change will be set Australia-wide in all industries and for all training providers. There must be conceptual rigour in the overall system. It will need to respond to changed industry needs without radical and disruptive change to its basic tenets. The sometimes conflicting needs for responsiveness and stability will be better accommodated within a national framework.

Increasing the supply of appropriately skilled people takes time. Competency is the product of training and experience. Curriculum development and accreditation are complex and lengthy processes. Introduction of substantial change in curriculum in turn requires the acquisition of different competencies by trainers. A standards framework



which is consistent across industries and across Australia is required for training providers to be able to deliver satisfactory accredited training that is both nationally consistent and economical. Further, those trained will find the mobility across or within industries and across Australia that is one intended incentive to them to seek training, as well as a major benefit to the economy.

A stable framework is also a critical factor in obtaining nationally consistent assessment. If this does not occur then both employers and employees will see little value in setting competency standards at all.

Flexibility is required to accommodate specific industry and enterprise characteristics and necessary performance outcomes. Occupations can have a core of skills which are common across industries or regions but require industry or enterprise specific components. Flexibility is also critical to enabling standards to evolve as technology, work organisation and market structures change.

Most Australian enterprises and organisations are small. Thus Australian competency standards must be capable of being utilised by companies with limited managerial resources and facilities. This emphasises the need for simplicity as well as flexibility in the system.

Finally, Australian standards must not directly or indirectly limit access by individuals on the grounds of age, gender, social or educational background. Standards will help the National Office of Overseas Skills Recognition remove barriers to the ability of Australian residents to employ the skills they have acquired through overseas training and experience.

Introduction to Competency Standards

The principal purpose of the National Training Board is to endorse, within a national framework, national competency standards proposed by the industrial parties.

This framework will establish reference levels so that standards can properly relate to the range of competencies required in particular occupations and classifications in industry on the one hand, and to formal vocational educational qualifications on the other hand. The Australian Standards Framework is described in chapter 4.

A national standard establishes the competencies required for effective performance in employment.

A competency comprises the specification of the knowledge and skill and the application of that knowledge and skill within an occupation or industry level to the standard of performance required in employment.

Standards and the vocational training system

In order to achieve an effective, efficient, responsive and coherent national vocational education and training system, the following interrelated components are necessary:

- **Competency standards.** Competency standards reflect the specification of the knowledge and skill and the application of that knowledge and skill to the standard of performance required in employment. Standards are developed by the industrial parties, based upon the organisation of work, expressed in terms of workplace outcomes and regularly reviewed to ensure their continuing relevance to the workplace.
- **Training and curriculum development.** Training and curriculum development includes the preparation of training objectives, curricula, and training programs. The development of curricula and training programs is based on the need to encompass and provide for the achievement of competency standards, and their articulation between levels.
- **Accreditation.** Accreditation is the process of granting official approval to curricula and training programs. The process is administered by State or Territory accrediting bodies who ensure that training programs deliver the required national competency standards with programs of educational quality.
- **Training delivery.** Accredited training programs may be delivered by approved public and private sector providers. Formal approval to deliver accredited programs is managed by the State or Territory vocational education and training authorities.
- **Assessment.** Assessment is the process of judging competency against prescribed standards of performance. The process involves both the recognition of prior learning and formal assessment related to accredited training programs.





- **Certification.** Certification is the provision of formal recognition that competency has been achieved or demonstrated. It will normally involve the provision of a certificate, an award or some other formal credit arrangement by a training authority, a vocational educational institution or an assessment body.
- **Monitoring and verification.** Monitoring and verification are quality assurance processes involving internal, local and external validation to ensure the vocational training system delivers national competency standards.
- **Review.** Competency standards and related curricula and training programs need to be systematically reviewed to ensure they remain relevant to the actual needs of industry. The National Training Board will only endorse competency standards which incorporate review processes.

Competency standards developed by the industrial parties and subsequently endorsed by the National Training Board will form the keystone of the Australian vocational education and training system. The development, endorsement and review of competency standards provides a vehicle for the industrial parties to ensure the integrity and continuing relevance of vocational education and training, both on and off the job.

National competency standards

National competency standards are by definition those which have national applicability and facilitate transferability between employment situations. These are termed core standards. Core standards are valued by employers and employees because they facilitate transferability and provide the basis for both broad skilling and up-skilling of the workforce. The standards should also improve the efficiency and effectiveness of the design and delivery of training programs.

Vocational training activities and processes for the recognition of prior learning are to be based on agreed competency standards which reflect realistic workplace requirements. In a typical workplace these include competencies which are common to a range of occupations, industries and enterprises. Additionally, industry requires competencies which are applicable only to specific industry sectors or enterprises.

National core competency standards will therefore comprise those required in an occupation together with those required by a particular industry or industry sector. Core standards consist of:

- **Occupation core standards.** These are competency standards which must be achieved by all persons in an occupation regardless of their particular job. They include broad-based competencies in numeracy, literacy, occupational health and safety and communication within their occupational context. They also include the broad technical competencies deemed by the industrial parties to be the essential basis for the occupation.
- **Industry core standards.** These are additional to the occupation core standards and include competencies, both broad-based and



technical, which are required for a person to be effective in a particular industry or industry sector. For example, an automotive mechanic will require core standards which are appropriate to that general occupation. If the mechanic is employed in the heavy vehicle sector, he or she will need additional standards to meet the competencies appropriate to that sector.

The National Training Board will encourage the early development, endorsement and implementation of core competency standards at both occupation and industry levels. These core standards should provide the basis on which a more effective vocational education and training system will be built.

There are however refinements and variations to core competency standards which are essential to improved competitiveness and which will contribute positively to workplace flexibility. Refinement and variation may be needed to:

- provide a basis for up-skilling and broad skilling in the workforce
- increase the relevance of core competency standards in a particular enterprise or industry
- add new specific competencies required in an industry subsector or enterprise.

The Board believes such variations and refinements are best developed within the Australian Standards Framework so as to maximise their transferability between sectors and enterprises. Accordingly it is open to any enterprise or organisation to submit its standards to the Board for endorsement. The general endorsement processes are outlined in chapter 8. For individual enterprises or organisations the Board will initially consider submissions case by case provided that:

- there is a demonstrated need for the addition of new competencies or the refinement and further development of existing ones
- the submission does not seek to duplicate standards which are being developed by other bodies
- the proponents have consulted with those who have principal responsibility for the relevant core competency standards.

3. Policy and Priorities

After considering overseas experience and the Australian context, the National Training Board has determined the following principles on which its policy in the initial period of operation of the national standards system will be based.



Policy

- 1 National competency standards for occupations and industry classifications are to be developed and endorsed within a formal framework.
- 2 Core competency standards for occupations and for industries must have broad applicability across industries and Australia.
- 3 Standards must define performance outcomes required by the industrial parties; be deliverable by training providers; and be assessable in practice.
- 4 Standards are to be expressed in a manner which can be understood in the workplace and training environment.
- 5 Standards systems must have built in review and monitoring mechanisms.
- 6 Standards must not directly or indirectly limit access by individuals on the grounds of age, gender, social or educational background.
- 7 Standards may be approved on a full or provisional basis; depending on the extent to which the industry has satisfied the Board that its standards are soundly based, training delivery and accreditation is obtainable, and assessment on a nationally consistent basis is achievable.
- 8 The National Training Board will work in partnership with industry and training authorities to achieve our common objectives.

The Board sees the application of these principles evolving over time as Australian experience in developing, monitoring and reviewing standards, delivering training to these standards and assessing individuals accrues.

Priorities

The Board has limited staff and financial resources and must set priorities for their use. These will be based on the following criteria during 1991.

- 1 Active facilitation of the development of competency standards in a representative range of occupations and industries to provide a balanced test of the national framework.
- 2 The particular industry's need for approval of its standards is urgent.
- 3 The body to develop the competency standards has been formally recognised by the Board (see chapter 7).

4. The Australian Standards Framework

In a competency-based training system a defined framework is necessary to establish reference points so that standards properly relate to the range of competencies required in particular occupations and classifications on the one hand and to formal vocational educational qualifications on the other.

A framework is also a necessary prerequisite for providing benchmarks for the recognition and certification of experiential learning, for training provided overseas, for enterprise-based training and for formal training provided in the public and private institutional systems.

In determining its position the National Training Board has sought to create a framework which will:

- facilitate the specification of skill levels required by the workforce
- directly relate to desired levels of competency in terms of performance outcomes required in the workplace
- have a relatively simple structure so as to be readily understandable by those who will use the standards
- be relevant to industry and training needs now and in the future
- provide for comparability of standards across occupations and industries
- allow for an appropriate degree of flexibility in the vocational education and training systems
- enable the resource implications of training provision for both the public and private sectors to be realistically identified.

Each industry should prepare, compare and align its career path requirements with the competency levels in the framework. However, the framework should be viewed as being concerned only with competency standards and related vocational education and training. The framework has little use for other evaluative purposes as comparisons between industries may in some cases be either meaningless or misleading.

Competency standards and related vocational training must be able to respond to the changing needs of a range of occupations and industries. The standards framework adopted by the National Training Board is therefore broadly-based.

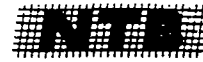
The Australian Standards Framework

The National Training Board has decided to establish an Australian Standards Framework of eight competency levels which will serve as reference points for the development and recognition of competency standards. Vocational training and qualifications may be compared by using competency levels.

Each of the competency levels describes the total competency required at the level. Between entry to and final achievement of a particular level there may be gradations of competency. This is particularly likely for level one which may commence with induction and culminate when the person has



achieved sufficient competencies to be deemed a competent operative. Similar gradation may be appropriate in subsequent levels.



For each of the competency levels an indication is provided of how current formal educational qualifications may relate to the competency level. In so doing the Board is not endorsing the qualification as being currently appropriate in either context or nomenclature. Nor is the Board endorsing the possession of such qualifications as a prerequisite to assessment of competency or employment at the respective levels.

The adoption of the standards framework provides an opportunity to achieve national consistency in the range, value and nomenclature of vocational qualifications. It is the intention of the National Training Board to consult widely with the Register of Australian Tertiary Education (RATE), higher education and the Technical and Further Education (TAFE) sectors on how best to develop and establish the relationship between competency standards, vocational education and qualifications.

Competency levels

Level 1. The person has an established work orientation, and the knowledge and skills required to perform routine, predictable, repetitive and proceduralised tasks, involving very limited theoretical knowledge and motor skills, and under close supervision.

This level corresponds to a competent operative or service sector worker.

Current preparation for employment at this level is generally obtained through job specific training, mainly in the workplace, which may be certified by appropriate authorities.

Level 2. The person has an established work orientation, and the knowledge, skills and demonstrated capacity to perform proceduralised tasks under general supervision and more complex tasks involving the use of theoretical knowledge and motor skills under close supervision.

This level corresponds to an advanced operative or service sector worker.

Current preparation for employment at this level is generally obtained through job specific or general training which may be certified by appropriate authorities.

Level 3. The person has an established work orientation, and the knowledge, skills and demonstrated capacity for self-directed application (including the selection and use of appropriate techniques and equipment) required to perform tasks of some complexity involving the use of applied theoretical knowledge and motor skills.

This level corresponds to a competent skilled autonomous worker.

Current courses of formal vocational education and training available to assist in preparing for employment at this level generally are those leading to a trade certificate or equivalent in a non-trade occupation.



Level 4. The person has highly developed knowledge, skill and capacity for self-directed application (including the selection and use of appropriate techniques and equipment) required to perform highly complex tasks involving substantial applied theoretical knowledge and motor skills. May perform complex tasks without supervision or engage in some supervision of the work of others.

The level corresponds to an advanced skilled autonomous worker.

Current courses of formal vocational education and training available to assist in preparing for employment at this level generally are those leading to initial post-trade or equivalent certificates. In some states or occupations existing advanced certificates or equivalent may apply.

- c. **Level 5.** The person has an established work orientation, and the knowledge, skills and demonstrated capacity for self-directed application (including the selection and use of appropriate techniques and equipment) required to perform tasks involving independent use of a high degree of technical or applied theoretical knowledge, possibly in combination with developed motor skills. May undertake limited creative, planning, design or supervisory functions.

This level corresponds to a competent administrator, specialist, technician or paraprofessional.

Current courses of formal vocational education and training available to assist in preparing for employment at this level generally are those leading to an advanced certificate. In some states or occupations existing associate diplomas, diplomas or their equivalent may apply.

Level 6. The person has a developed capacity to make autonomous use of a high degree of applied theoretical knowledge in combination with mastery of the theoretical bases of that applied knowledge. Tasks may require developed motor skills. May undertake significant creative, planning, designing or supervisory functions related to products, services, operations or processes.

This level corresponds to a competent senior administrator, specialist, technologist or paraprofessional.

Current courses of formal vocational education and training available to assist in preparing for employment at this level generally are those leading to an associate diploma or a diploma. In some states or occupations a degree may apply.

A national system of competency standards must also encompass competency levels required in the professions and executive management, some of which fall outside the immediate responsibility of the National Training Board. To facilitate articulation of competencies it is necessary for the framework to encompass competency levels for the professions. The National Training Board has developed the following descriptions of higher competency levels which it intends to use as a basis for extensive consultations with appropriate industry and government bodies.

Level 7. The person has a highly developed capacity to make autonomous use of a high level of theoretical and applied knowledge. Tasks may require developed motor skills. May undertake significant high level creative planning, design or management functions and may have substantial accountability and responsibility for the output of others.

This level corresponds to a competent professional or manager.

Current courses of formal vocational education and training available to assist in preparing for employment at this level generally are those leading to a degree or higher degree.

Level 8. The person has a highly developed capacity to generate and use a high level of theoretical and applied knowledge. Tasks may require highly developed motor skills. May undertake complex and major high level creative planning, design or managerial functions with full accountability and responsibility for the output of others.

This level corresponds to a competent senior professional or manager.

Current courses of formal vocational education and training available to assist in preparing for employment at this level generally are those leading to an appropriate degree or higher degree. Professional qualifications may also include postdoctoral research and evidence of publications which make a substantial contribution to knowledge.

The application of the Framework

The definition of competency levels within the framework facilitates objectivity and comparability and therefore utility of standards within and across industries. The determination of occupational classifications should remain the prerogative of the industrial parties. The allocation of occupational classifications either between or within the levels in the framework will therefore be specific to the industry or enterprise.

During the development of industry career paths, the National Training Board will, where requested by industry, provide advice on how best to arrange occupational classifications in relation to the competency levels within the standards framework.

In most cases the relationship will be self evident when the workplace requirements for classification are compared with the competency level definitions. The industrial parties may elect a career path in which more than one classification is related to a particular competency level. Alternatively, a career path may not require all competency levels. Examples of variations already evident in industry restructuring are depicted in the diagram opposite.

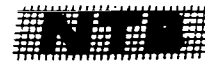


Industry Occupational Classification

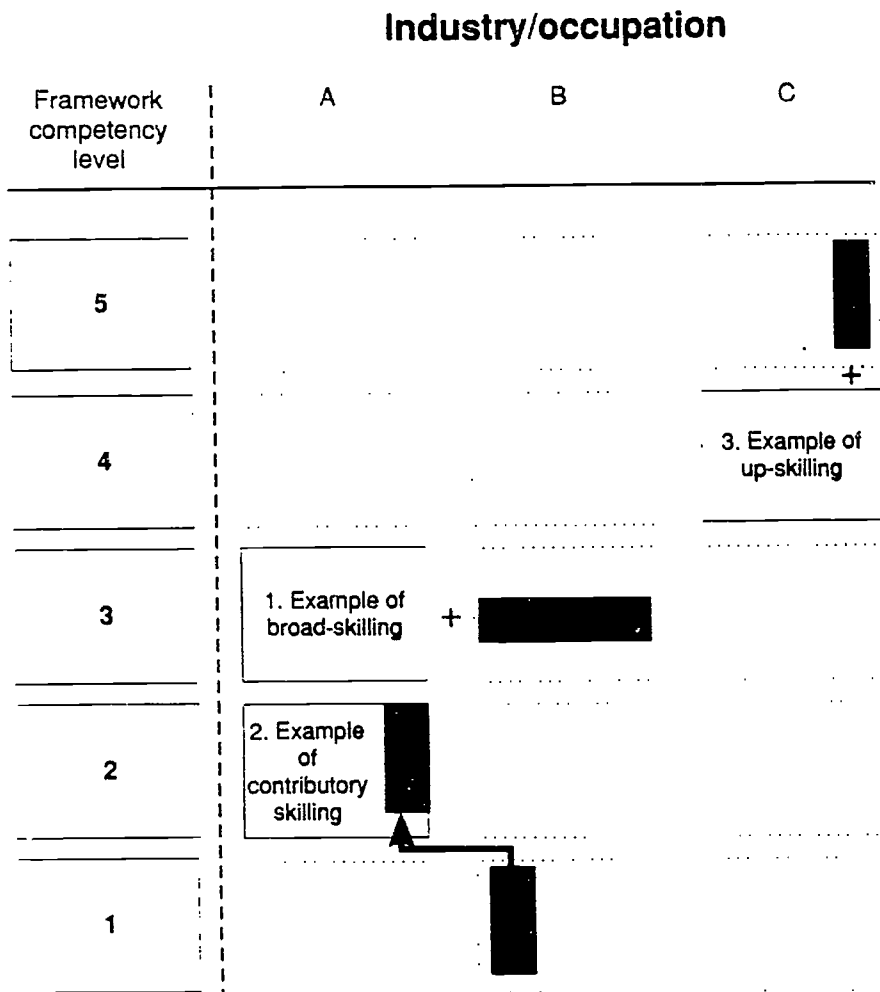
Framework competency level	Tourism: Kitchen Stream	Tourism: Food and Beverage Stream	Metals
8			C1B
7			C1A
6			C2B C2A C3 C4
5			C5 C6
4	8 7	6	C7 C8 C9
3	6 5 4	5	C10
2	3	4	C11 C12
1	2 1	3 2 1	C13 C14

Note:

These are indicative allocations of award career path classifications to the National Training Board's competency levels. The final allocation will be determined by the industrial parties.



The allocation of occupational classifications to Framework competency levels will provide the basis for the coordination of outcomes. Equivalence between and across industries may then be formally recognised; individuals may be given certificates for cross-sectoral capabilities and scope will exist for the streamlining of training. The importance of the Framework to workplace flexibility is illustrated in the following diagram which depicts arrangements for broad-skilling, up-skilling and contributory skills across industries and occupations and within vocational career paths.



Notes:

1. *Broad-skilling. For example a qualified plumber who acquires competencies required for a restricted electrical licence.*
2. *Contributory skilling. Where the competencies from the occupational classification are recognised as a core part of a second occupational classification. For example the base or operator level vehicle servicing competencies from the automotive occupations form part of driver or equipment operator competencies.*
3. *Up-skilling. A worker who has total competency at level 4 and who has sought to up-skill into a specific area of level 5.*

5. Analysis of Needs

Competency standards are determined by analysing the workplace needs and defining the competencies required in employment situations. The analysis focuses on what is expected of an employee in terms of performance, rather than on the learning process, and it encompasses the ability to transfer skills to new environments. This is a broad concept of competence and the analysis should cover:

- the requirement to perform individual tasks (task skills)
- the requirement to manage a number of different tasks within the job (task management skills)
- the requirement to respond to irregularities and breakdowns in routine (contingency management skills)
- the requirement to deal with the responsibilities and expectations of the work environment (job/role environment skills).

Within each of these components, the analysis should focus on what has to be performed (the competency) and then on what is needed to demonstrate or provide evidence of satisfactory performance (performance criteria). Performance criteria may, in less complex tasks, simply list evidence which is observable. In more complex tasks evidence is seldom totally observable and the performance criteria may need to explicitly include the demonstration of knowledge required to reproduce, select or optimise outcomes under varying conditions and circumstances.

The National Training Board will not prescribe and does not favour any particular analysis technique. The range of techniques (described in the glossary) includes:

- interview methods such as competency interviews and critical incident techniques.
- surveys both general and Delphi.
- convened group techniques such as nominal group techniques, DACUM and search conferences.
- others such as functional job analysis, CODAP, observation.

The decision as to which analysis technique is adopted will be influenced by resource availability, time, scope, size and nature of the labour force and other factors. The National Training Board requires only that the analysis technique adopted is both applicable and appropriate to the industry, enables the future needs of the occupation, industry or enterprise to be reflected, and does not discriminate against particular groups in the workforce.

National competency standards will be used by a broad cross section of the Australian community. It is therefore appropriate, in the interests of consistency and comprehension that national standards be expressed in a particular format. This chapter specifies the content and format of national standards through a number of examples. The starting point is the concept of competency. Units of competency are illustrated followed by their associated elements and performance criteria. Finally, a range of variables may be incorporated in the standards.

A. Competency

National standards define the competencies required for effective performance in employment. A competency comprises the specification of knowledge and skill and the application of that knowledge and skill within an occupation or industry level to the standard of performance required in employment.

The concept of competency focuses on what is expected of an employee in the workplace rather than on the learning process; it embodies the ability to transfer and apply skills and knowledge to new situations and environments. This is a broad concept of competency in that all aspects of work performance, and not only narrow task skills, are included. It encompasses:

- the requirement to perform individual tasks (task skills)
- the requirement to manage a number of different tasks within the job (task management skills)
- the requirement to respond to irregularities and breakdowns in routine (contingency management skills)
- the requirement to deal with the responsibilities and expectations of the work environment (job/role environment skills).

Moreover, the broad concept of competency should be:

- related to realistic workplace practices
- expressed as an outcome
- understandable to trainers, supervisors and potential employers.

A standard at any level is expressed in units of competency, each of which then comprises two parts: elements of competency and their associated performance criteria.

B. Unit of competency

A unit of competency is a discrete product. It comprises a *title*, a short description of its purpose where appropriate, and the elements of competency, together with their associated performance criteria.

- The title should refer to the general area of competency; it should be written in output terms and should be accurate and concise.



- A description of the purpose of the unit would be useful in showing the unit's relationship to other units but it is not always required if the title is sufficiently clear.

Examples

The following two examples of *titles* are from the kitchen stream in the tourism industry.

Unit of Competency: *Clean and maintain equipment and premises.*

Unit of Competency: *Prepare pastry, cakes and yeast goods.*

The next example is a *title* drawn from the mobile crane operator stream in the building and construction industry.

Unit of Competency: *Drive crane.*

Note: While the examples in this chapter are derived from draft standards under development in the industry they do not yet have the formal support of the industrial parties.

C. Elements of competency

Elements of competency are the basic building blocks of the unit of competency and, as such, continue the description of the key purpose of the unit itself. They describe, in output terms, things that an employee who works in a particular area is able to do, that is, an action or outcome which is demonstrable and assessable. Elements of competency, in relation to units, describe the lowest logical, identifiable and discrete subgrouping of actions and knowledge which contribute to and build a unit.

The following examples show the breakdown of the units of competency into elements of competency in the tourism and building and construction examples.

Industry: Tourism - Kitchen Stream	
Unit: Clean and maintain equipment and premises	
Element	Performance criteria
Clean and store equipment	
Element Clean premises	Performance criteria
Element Handle waste and linen	Performance criteria



Industry: Tourism - Kitchen Stream	
Unit: Prepare pastries, cakes and yeast goods	
Element Prepare, decorate and present pastries	Performance criteria
Element Prepare and produce cakes and yeast goods	Performance criteria
Element Prepare and decorate petits fours	Performance criteria
Element Apply portion control and storage procedures	Performance criteria
Element Apply basic hygiene principles and occupational health and safety standards	Performance criteria

Occupation: Crane Driver	
Unit: Drive crane	
Element Obtain permits	Performance criteria
Element Drive crane to nominated site	Performance criteria

D. Performance criteria

The next stage in the development of standards is the specification of performance criteria. Performance criteria are statements by which an assessor can judge the performance specified in the elements of competency to a level acceptable in employment. In other words, performance criteria are evaluative statements which specify the required level of performance.

In deriving the performance criteria from the elements, the developer should firstly define the evidence required to identify competency and be aware of the methods through which evidence may be obtained. Evidence may be collected through observation of performance, through computer or paper based assessment processes or through simulation. The actual method chosen will need to be appropriate to the information sought and the setting in which assessment may be logically, safely and economically conducted.

In some cases performance criteria will need to be explicit while in others they may be simple bridging statements which refer to standards which are already clearly documented in an industry regulation, publication or other repository.



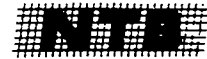
The principle is for the performance criteria to provide a satisfactory link between the competency and the required evidence of achievement. This is essential not only in terms of the competency standards but also in relation to the subsequent assessment and delivery of training programs. Below are provided examples extending the units and elements previously shown into the performance criteria stage.

Industry: Tourism - Kitchen Stream	
Unit: Clean and maintain equipment and premises	
Element	Performance criteria
Clean and store equipment	<ul style="list-style-type: none"> • Chemicals correctly selected and used according to health regulations for cleaning crockery, cutlery, pots and machinery. • Equipment cleaned according to manufacturer's instructions and without damage. • Cleaning chemicals stored correctly, safely and according to health and safety regulations. • Equipment stored safely and correctly in position to industry standard.
Clean premises	<ul style="list-style-type: none"> • Chemicals correctly selected and used according to health regulations for cleaning walls, floors, shelves and working surfaces. • Walls, floors, shelves and working surfaces cleaned to health and safety standards without causing damage. • Unused food returned to correct storage container.
Handle waste and linen	<ul style="list-style-type: none"> • Waste sorted and disposed of according to hygiene regulations and establishment practice. • Linen sorted and removed according to health regulations and establishment regulations.



Industry – Tourist Kitchen Stream
Unit – Prepare pastries, cakes and yeast goods

Element	Performance criteria
Prepare, decorate and present pastries	<ul style="list-style-type: none"> • Sweet and short pastry produced to basic standard recipe. • Puff, filo and strudel dough pastry-based products correctly identified. • A variety of choux-based products prepared and presented to standard recipe. • A variety of pastry products produced to restaurant dessert trolley standard.
Prepare and produce cakes and yeast goods	<ul style="list-style-type: none"> • A selection of sponges and cakes prepared and decorated to standard recipe. • A variety of yeast-based products produced and served to industry standard.
Prepare and decorate petits fours	<ul style="list-style-type: none"> • Petits fours selected to complement given situation. • Petits fours prepared and decorated to industry standard.
Apply portion control and storage procedures	<ul style="list-style-type: none"> • Portion control applied to minimise wastage. • Storage procedures identified and applied correctly for cakes and pastry products.
Apply basic hygiene principles and occupational health and safety standards	<ul style="list-style-type: none"> • Basic hygiene principles and occupational health and safety standards applied according to industry regulations.



Occupation: Crane Driver	
Unit: Drive crane	
Element	Performance criteria
Obtain permits	<ul style="list-style-type: none"> Permits obtained if required to allow transportation of crane to site.
Drive crane to nominated site	<ul style="list-style-type: none"> Hazards, including overhead obstructions, poles adjacent to roadways and corners recognised and negotiated safely. Crane driven according to relevant traffic regulations. Starting procedures, gear changing and braking carried out to ensure smooth and safe transportation of crane.

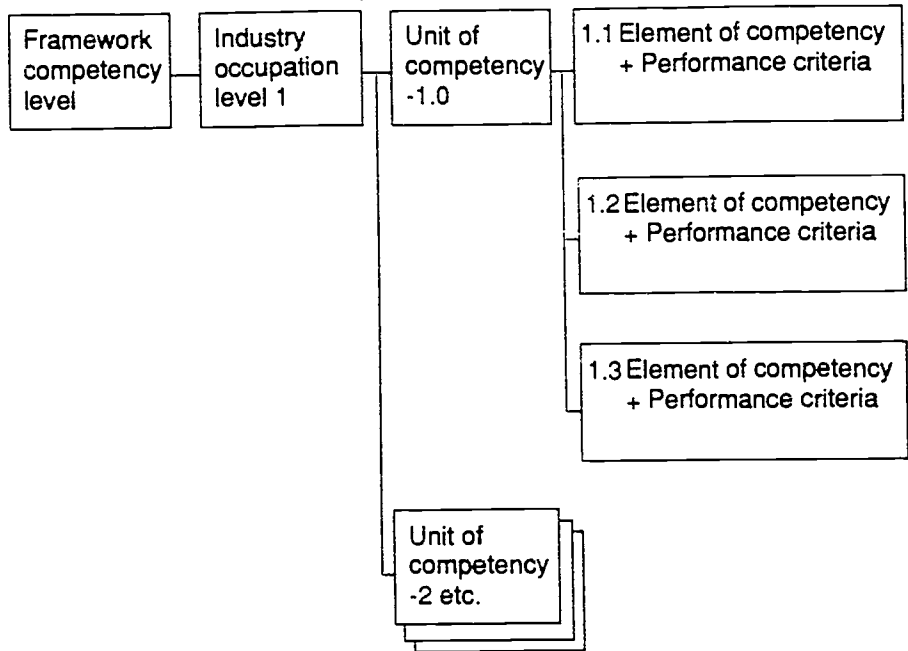
E. Range of variables

It may be appropriate to incorporate a further stage into the development of competency standards. This stage would include a range of variables statement which spells out the range of contexts and conditions to which the performance criteria apply. These will provide some guidance for the assessor or developer of training programs on the boundaries of the application of the performance criteria. This may apply to a particular range of technology or equipment, to particular types of sites, for example small versus large, or to occupational overlap between industries.

A range of variables statement will not be appropriate in all competency standards which are developed by an industry. Each industry will need to decide whether it believes performance criteria alone provide clear boundaries within which its assessors and curriculum developers can operate.

Summary diagram

The following diagram depicts a complete standards model. It shows the flow in the development of national competency standards beginning from an Australian Standards Framework competency level and ending with the development of performance criteria. When appropriate, a range of variables may also be incorporated.



7. Recognition of Competency Standards Bodies

This chapter deals with the general and specific conditions that industry bodies are required to satisfy to gain recognition as competency standards bodies.

A recognised body is one which is formally accepted by the National Training Board. Such a body is required to:

- have expertise, or have access to expertise recognised by the National Training Board, in competency standards development
- be identified and accepted within the industry as being representative of an occupation, industry or industry subsector
- have the clear support of the industrial parties within an occupation, industry or industry subsector.

Such bodies may be drawn from the network of national and state industry training advisory bodies, and from bodies established or recognised under restructured awards for this purpose. The National Training Board may, however, recognise other bodies as appropriate. Only one body or consortium will be recognised for any occupation, industry or industry subsector.

In considering claims to be recognised as a body for the initial development or subsequent review of competency standards the National Training Board will consult with the appropriate industrial parties. In addition the Board may seek advice from peak employer and union organisations, Federal, State and Territory authorities or any other relevant organisation or person.

Bodies presently or intending to develop standards for initial endorsement by the Board should apply in writing to the Chief Executive for recognition as a competency standards body.

Bodies seeking recognition are required to provide the Board with information on the intended development and implementation strategy. Applications should be submitted using the application form available from the Board's offices. The application form seeks information which includes:

- an outline of the objectives and the industrial context within which the development of competency standards and associated training and assessment programs is to occur
- details of other key industry groups or sectors which have a direct interest in the proposed national standards and the intended process for consultation with these groups
- arrangements for consultation with the National Office of Overseas Skills Recognition
- an estimated timeframe for standards development
- a statement on how the industry intends to develop its standards and implement them in terms of training development, accreditation, delivery and assessment



- where an industry intends to use a consultant to develop standards, the name, qualifications and relevant experience of the consultant should be supplied together with an explanation of how the consultant is to be used.

Bodies shall be notified in writing when they have been recognised by the Board for development or review of competency standards for an occupation, industry or an industry subsector. Recognition may apply for a limited period, depending on the activities of such bodies. Similarly, recognition may apply to the whole of an industry or to sectors within it.



8. Endorsement of Competency Standards

In consultation with the industry body or consortium the date on which its standards will be considered by the Board will be decided. Complete submissions, together with relevant attachments, are to reach the Board's office in Canberra at least 21 days before the Board meeting.



In the interests of consistency and comprehension the Board requires that standards be presented in a form consistent with the Australian Standards Framework and format described in chapters 4 and 6 including the allocation of occupational classifications to the competency levels in the framework.

In addition, the Board requires that the proposers of the standards provide appropriate evidence or assurances that:

- all principal interested parties have been consulted, including those in other industries and the State or Territory training authorities who may need to provide resources
- all significant areas of difficulty identified during consultation are briefly outlined in the submission
- strategies and processes for training delivery, recognition of prior learning and assessment of individuals exist and are likely to lead to nationally consistent standards and outcomes
- the standards do not directly or indirectly limit access by individuals on the grounds of age, sex, social or educational background
- implementation, training delivery and assessment will be monitored by the body to ensure the standards are maintained and continue to be relevant and that the standards will be reviewed by a nominated date.

In its first endorsement of standards the National Training Board will set a time limit on that endorsement. By the end of that period the National Training Board will require that standards be reviewed and resubmitted to the Board for further approval.

Board decision

The Board may endorse standards as submitted, endorse them subject to minor changes or refer them back to the recognised body for further action.

The Board is obliged to advise Commonwealth, State and Territory Governments of its intention to endorse competency standards. The governments then have 28 days to raise objections. If no objection is received then National Training Board endorsement is automatic. If an objection is made then this will require further consideration by the Board or the industry, with the governments. The developing body will be advised by the Board.

Working with the Board

The Board operates through its office in Canberra between formal meetings. The Board's staff will assist industry by providing advice on the content and format of standards as well as on the Board's guidelines, criteria and processes. It is the function of the staff to ensure that the Board's guidelines are complied with and that an industry seeking to develop standards is informed of all relevant issues. The staff are the principal contact between industry and the Board.

When the Board endorses a standards submission:

- the recognised body will be formally advised of the endorsement and any conditions which may qualify the endorsement
- Board staff will contact the body to carry out the required action
- the standards will be entered into the Australian Register of Competency Standards
- the review process and schedule will be agreed and recorded for further action.

Appendices



Glossary of Terms

In order to avoid confusion and debate, it is necessary to agree on terminology. Although the following definitions are not exhaustive they may assist readers in their understanding of this discussion paper.

accreditation refers to official recognition or assurance by State or Territory accreditation authorities that:

- the contents and standards of a course or training program are appropriate to the certification or award to which it may lead
- the course or training program and methods adopted in delivering it are likely to achieve the purpose for which it was introduced
- the curriculum, including assessment methods, will enable the achievement of the required competencies and national standards where these have been established by the National Training Board.

articulation is the formal linkage between different levels or different fields of study, including enterprise and industry-based training. Articulation arrangements allow the horizontal or vertical movement between programs or between education and employment.

assessment is the process of forming a judgement about a performance or product against performance criteria in a statement of standards.

certification is the provision of a certificate or award usually as a result of the assessment process which could involve examination, practical tests, performance observation and the completion of assignments.

CODAP is a technique of job analysis based on the concept of dividing a job into tasks. Based on interviews with representative members of an occupation, a questionnaire is developed, tested and refined. Job information is collected from workers and supervisors by means of the questionnaire after which a set of computer programs is used to enter, quantify, organise, summarise and report on this information.

competency is the ability to perform the activities within an occupation or function to the standard expected in employment.

competency interview is a one-to-one interview carried out by a person skilled in the technique; its purpose is to identify and list competencies of workers in particular positions. Only persons in the position under investigation or their immediate supervisors participate.

competency level is part of an agreed framework against which vocational training and qualifications may be compared.

core standards are those which are determined by the competency standards body to have national applicability.

critical incident technique is a one-to-one interview carried out by a person skilled in the technique which requires participants to focus on significant work incidents from their past and the competencies which enabled them to perform successfully. The technique focuses on the underlying attributes and individual characteristics of successful performance rather than on routine duties and tasks.

curriculum is an organised program constituted by a structured series of learning outcomes and associated learning experiences, generally organised as an integrated combination or series of courses. The successful completion of a curriculum is seen as necessary to achieve specified training/educational goals corresponding to different levels of qualification.



DACUM is an information collection technique using participation from a group which is representative of the particular occupation and a skilled facilitator which identifies:

- the duties of the occupation
- the component tasks of each duty
- the knowledge, skills and applications needed to perform each task.

Delphi is a survey technique usually conducted by mail which aims to reach consensus by repeatedly summarising participants' responses and incorporating these into subsequent questionnaires. Participants learn the opinions of others but discussion, debate and open conflict are not possible.

functional job analysis is an information collection technique using group participation, usually by the lead bodies or representative peak training organisation in an industry, and a skilled facilitator to establish the competency standards for an occupation. It identifies:

- the key purpose or function of the occupation in terms of outcome
- the elements of competency which allow the key purpose to be achieved
- the performance criteria for each task identified as necessary for competency.

industrial parties is the combination of groups which make up the industrial relations environment. Typically, this involves the employers, employer associations, employees, and unions within an industry.

monitoring or verification is the process of quality assurance involving internal, local and external validation of the integrity of the training system. It should not be confused with assessment.

nominal group technique is an information collection technique using group participation and a skilled facilitator which focuses on the generation of answers to a specified question. Participants work independently on the question before the facilitator collects and records information from each person in turn.

registration is the process through which a training provider's right to provide education/training is validated by an external authority against specific criteria which may include legal and financial organisation, qualification of staff, premises and equipment, and organisational code of practice.



search conference is an information collection technique using group participation and a skilled facilitator which moves from generating ideas through synthesising and analysing these ideas to action planning. It is particularly useful in exploring desirable environments and strategies for achieving goals.

skill may be perceptual, motor, manual, intellectual, social. The nature of tasks usually requires a combination of these and usually involves the application of cognitive and psychomotor functions, together with appropriate knowledge. Skill is (i) cumulative: it is built up gradually through repeated practice; (ii) sequential: each part is dependent on the previous part and influences the next.

standard is a statement in outcome terms of what is expected of an individual performing a particular occupational role.

task (or a combination of tasks) is a discrete, identifiable and meaningful unit of work that is carried out by the job-holder for a specific purpose leading to a specific outcome. The performance of a task requires the application of skill.

verification (see *monitoring*)

National Training Board Statement of Functions



- 1 The role of the National Training Board is, in consultation and co-operation with industry, to endorse national competency standards for occupations and classifications in industry or enterprise awards or agreements determined by an industrial tribunal including entry level, operative, trade, post-trade, technician and paraprofessional classifications. The competency standards relate to essential core skills and additionally may relate to other components determined by industry sectors and/or States and Territories for certification at any given level of occupation or classification.
- 2 These national standards are benchmarks for:
 - Industry bodies
 - State and Territory vocational education and training authorities
 - the Register of Australian Tertiary Education or any replacement body
 - the Australian Committee on TAFE Curriculum, and other bodies involved in curriculum development
 - State and Territory and other accrediting/approving bodies involved with, and in arrangements for, the accreditation/approval of institutional and non-institutional training, including articulation arrangements between related courses whether they be provided by universities, CAEs, TAFE colleges, schools, private providers or industry-based providers
 - bodies established to certify competencies by assessment, and
 - organisations involved in the recognition of migrant skills/overseas qualifications.
- 3 The functions of the National Training Board are:
 - a) to provide guidance in defining and developing national competency standards for occupations and classifications in industry or enterprise awards or agreements determined by an industrial tribunal
 - b) to consult with and take account of, advice from States, Territories and the Commonwealth on development and introduction of national competency standards
 - c) to maintain and publish a register of competency standards
 - d) to establish and promote nationally consistent methods of describing competency standards
 - e) to establish appropriate liaison with the Register of Australian Tertiary Education Advisory Committee or any replacement body and accrediting/approving authorities to satisfy itself that there is consistency in the implementation of national competency standards
 - f) to promote awareness of the purpose of competency standards and the role of the National Training Board
 - g) to report annually to Commonwealth, State and Territory Ministers on matters relevant to its functions, and
 - h) to carry out any other functions which may be conferred on it by agreement between the Commonwealth, States and Territories.

Appendix C



National Training Board Ltd: Organisation

The National Training Board is incorporated in the Australian Capital Territory as a company limited by guarantee. In January 1991 its members are the Commonwealth, State and Territory Ministers responsible for the regulation of vocational education and training:

The Hon John Dawkins MP
Commonwealth

The Hon John Joseph Fahey MLA
New South Wales

The Hon Barry Pullen MLC
Victoria

The Hon N G Warburton MLA
Queensland

The Hon G J Troy MLA
Western Australia

The Hon Mike Rann MP
South Australia

The Hon Michael Anthony Aird MHA
Tasmania

Mr Trevor Kaine MLA, Chief Minister,
ACT

The Hon Shane Stone MLA
Northern Territory

The Members appoint the Board of Directors who are:

Mr Graham Slee AM	Chairman
Mr Anthony Daniels	Employer Representative: Managing Director Tubemakers of Australia Limited
Mr David Trenergy	Employer Representative: Group Manager, Industrial Relations Shell Australia Limited
Mr Julius Roe	Australian Council of Trade Unions Representative: Industrial Officer Association of Drafting, Supervisory & Technical Employees
Ms Kate Wood	Australian Council of Trade Unions Representative: Assistant State Secretary Victorian Branch Municipal Officers Association

Mr Michael Murphy	Principal Adviser TAFE & Skills Formation Division Commonwealth Department of Employment, Education & Training
Mr Barry Grear AM	Deputy Chief Executive Officer Department of Employment & TAFE, South Australia
Mr David Hawkes	Secretary Department of Labour & Administrative Services, Northern Territory
Mr Norm Fisher AM	Director ACT Institute of TAFE, Australian Capital Territory
Mr Peter Henneken	Executive Director Development & Operations, Department of Employment, Vocational Education & Training and Industrial Relations, Queensland
Mr Paul Albert	Executive Director Department of Employment & Training Western Australia
Mr Ross Bushrod	Assistant Director, Vocational Training Branch, Department of Industrial Relations & Employment, New South Wales
Mr Doug Smith	Deputy General Manager State Training Board, Victoria
Mr Darcy McGaurr	Secretary Department of Employment, Industrial Relations & Training Tasmania

The Company's senior staff are:

Chief Executive:	Alan M Godfrey
Manager Standards:	Bob Cooper
Manager Policy and Research:	Peter Hannigan
Manager Training Guarantee:	Bill Rowe

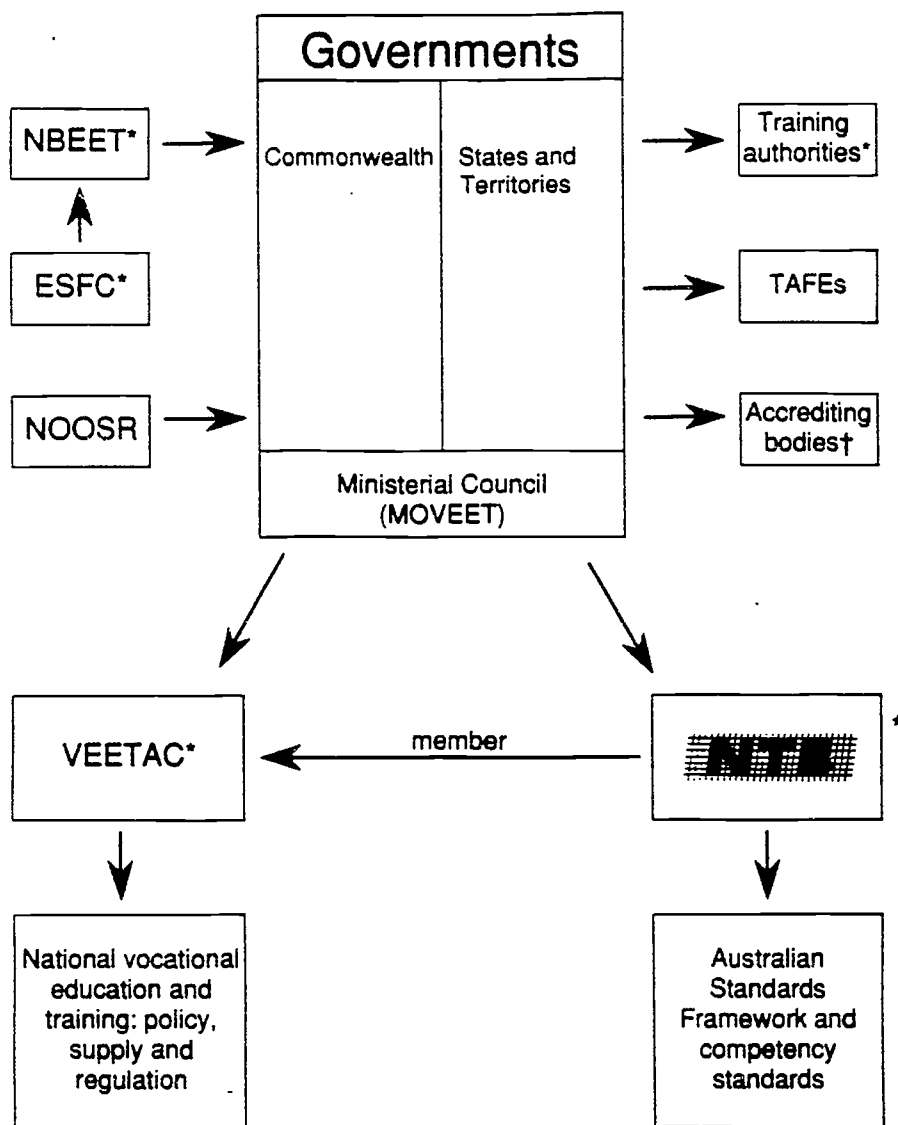
The Board's offices are located at
91 Northbourne Avenue
Turner ACT 2601

GPO Box 2979
Canberra City ACT 2601

Telephone (06) 257 1964
Facsimile (06) 257 2719



National Training Board and Government Bodies



* Tripartite body

† Tripartite in some States or Territories

- NBEET National Board of Employment, Education and Training
- ESFC Employment and Skills Formation Council
- NOOSR National Office of Overseas Skills Recognition
- TAFE Technical and Further Education authorities
- VEETAC Vocational Education, Employment and Training Advisory Committee
- MOVEET Ministers of Vocational Education, Employment and Training

ORGANISATION

NATIONAL ACCREDITATION

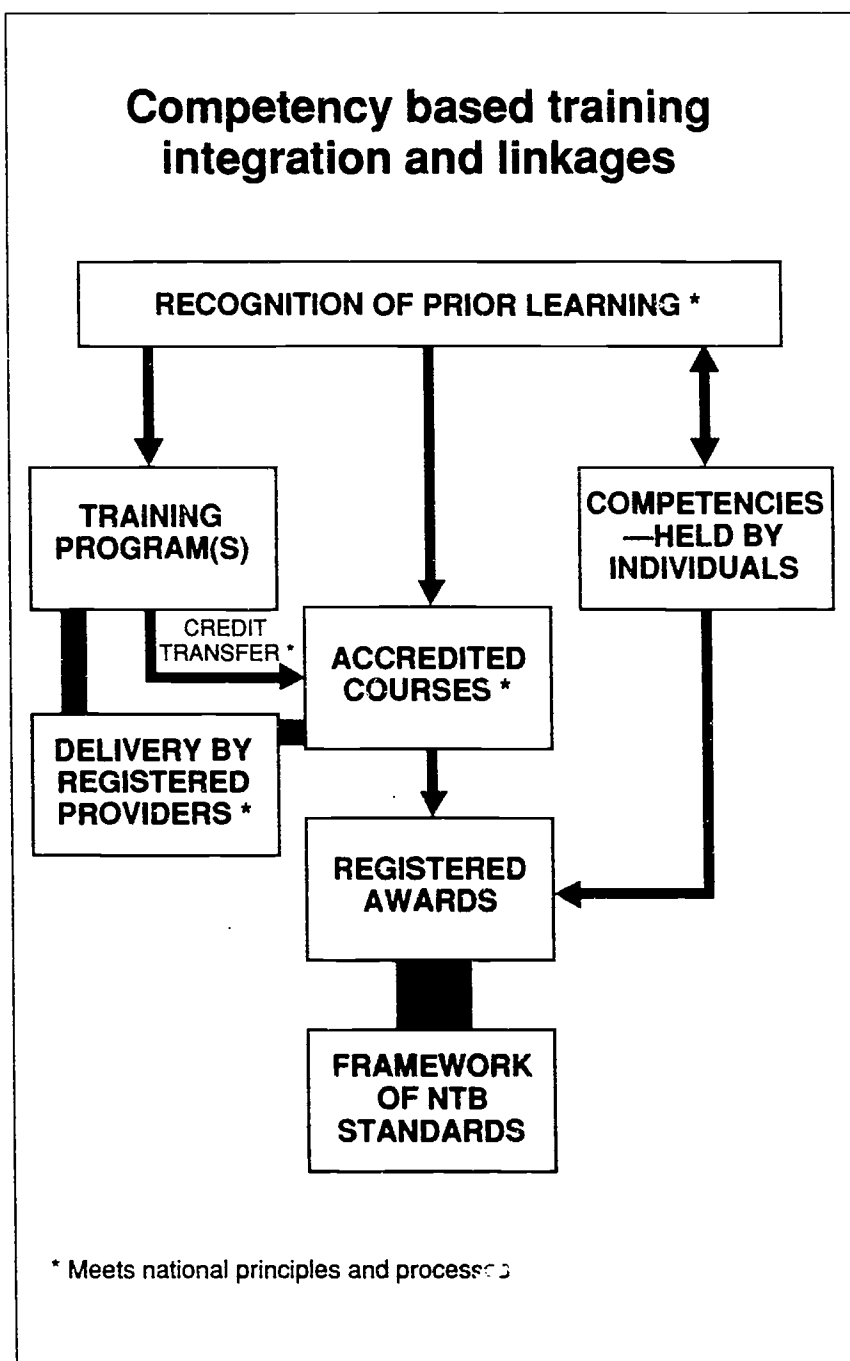
A national market for training is a step closer with the development of a framework for a national accreditation system.

Accreditation of education and training provides official recognition that the content, quality and outcomes of courses are appropriate. It is the responsibility of the states and territories and has traditionally operated separately in each of them. This meant curriculum, courses or providers accredited in one state had to be reaccredited, usually under different rules, if they operated in another state or territory.

This will end under proposals for reform of the Australian Vocational Education and Training system developed by the Recognition of Training working party of VEETAC (see box). The new system will provide a nationally consistent approach and links to the move to competency based training.

The states and territories will still be responsible for accreditation but within an agreed national framework of principles. In addition there will be reciprocal recognition of accreditation, meaning that a course or provider need only be accredited in one state or territory to be able to operate across the country. This is consistent with the conclusions of the Deveson Committee on Training Costs Review.

There is an explicit link to national competency standards. To be accredited, a course must



OF TRAINING

enable trainees to achieve competencies at those standards which have been endorsed by the National Training Board. Another aspect picked up from the Deveson Committee is linking training provided in the public and private sectors to maximise access to and participation in accredited training.

The key features of the proposed new system are:

- Credential courses, that is, those accredited courses leading to some form of certification of achievement, are to be the benchmark for national recognition by the states and territories.
- Nationally agreed principles and processes are put in place for the:
 - Δ accreditation of credential courses
 - Δ determination of credit transfer between training programs and credential courses
 - Δ registration of training providers
 - Δ recognition of prior learning
 - Δ assessment of competencies.

Other features include:

- Industries being able to set up their own recognition processes and be included within the national framework on a case by case basis through negotiation with VEETAC. If agreed this would enable an industry accreditation body to accredit courses and trainers in their industry, and issue credentials.
- A framework for credentials based on competency. Credentials that are issued for successful achievement of competencies, such as through an accredited course, will be aligned with competency levels in the Australian Standards Framework.
- The National Training Board developing and maintaining a national register of accredited courses and registered training providers on behalf of the state and territory accreditation and training authorities. This would link to the Board's existing role of developing and maintaining a register of national competency standards.

The national recognition of training has been approved in principle by the Commonwealth, state and territory ministers of vocational education, employment and training. Discussion and consultation on the precise operation of the system is occurring

during the second half of this year, with the intention that these reforms to the Australian Vocational Education and Training system would commence on 1 January 1992.

As part of this process the Confederation of Australian Industry has produced a booklet called *CBT—proposals for the Australian Vocational Education and Training System*, which summarises many of the recent developments in the system. They have also sponsored a series of briefing sessions for employers through their affiliates around the country to provide information on the emerging system and contribute towards the final shape.

These changes to the system in Australia should enable employers and employees access to a more efficient, flexible and responsive education and training system.

VEETAC—yet another acronym to remember

It stands for the Vocational Education, Employment and Training Advisory Committee, and consists of senior representatives of the Commonwealth, state and territory departments and authorities responsible for vocational education, employment and training plus representatives of the ACTU, CAI and the NTB. It advises the ministers responsible for those portfolios. It has a number of committees and working parties reporting to it, including:

- Recognition of Training
- Competency Based Training
- Australian Committee on Training Curriculum (ACTRAC)
- others, including some on various aspects of the TAFE system.

Modularisation and Progression:

*Issues in the
14 - 19 curriculum*

**Ken Spours
Donald Mack
Janet Jones
Elaine Sauve
James Holifield**

January 1989
Working Paper Number 6

**Department of Policy Studies
Institute of Education, University of London
55 - 59 Gordon Square, London WC1H ONU
Tel: 071 - 636 1500 Fax: 071 - 436 0167**



Introduction

These papers on 'Modularisation and Progression' arise from a conference held at the Institute of Education in June 1988. The aim of the conference was to establish the relationship between various strategies of modularisation and improving student progression in the 14-19 curriculum.

Particular emphasis has been placed upon the immediate need for a comprehensive modular framework and breaking down the division between pre-vocational, vocational and academic awards in the 16+ curriculum.

This collection of papers attempts to advance the debate in three ways:

First by an analysis of the relationship between modularisation and progression and problems in the system of qualifications in England and Wales (paper by Ken Spours).

Secondly by focusing upon the Scottish Action Plan (Scottish National Certificate) as a current example of a modular framework in practice (paper by Donald Mack).

Finally, by a brief survey of various initiatives and projects which in differing ways are attempting to introduce flexibility into the 14-19 curriculum (papers by Janet Jones, Elaine Sauv , James Holifield).

We hope to follow this series of papers with a more detailed analysis of modular developments and the creation of a comprehensive 14-19 framework. These will be discussed at a working conference on this area to be held at the Institute in May 1989.

Ken Spours
January 1989

Modularisation and Progression

Ken Spours

Introduction

Modular developments and modular systems

Modular developments are seen by many practitioners as a means of reforming the curriculum and can be viewed as an alternative way to learning by subjects and year-long courses. Modular approaches to learning have been embraced by employers who would like to see the curriculum made more occupationally relevant and flexible and by educationalists seeking a more accessible curriculum for underachievers.

The idea of a modular approach to curriculum design is not new.¹ It has been established in the United States for many years. In Britain a unit structure is practised by the Open University and modules have been part, at least of the vocabulary, of validating bodies such as BTEC and the CPVE Joint Board. Generally speaking there is an increasing recognition that modular developments can embrace different institutions and sites of learning. In Scotland modularisation has been implemented on a national scale with the development of the Scottish Action Plan for a modular structure encompassing post-16 technical and vocational provision. Modular developments in England and Wales however have been largely fragmented, being restricted either to isolated experiments in schools and LEAs or to unitising learning within qualifications rather than as a means of altering the relationship between them.²

The main purpose of this paper is to explore the relationship between modularisation and progression. Close analysis would suggest that the major problem of progression arises from the divisions between academic, vocational and pre-vocational learning and the stratification of qualifications, exemplified by the problematical relationship between CPVE and BTEC First, though by no means confined to this area. These deep-seated divisions give rise to barriers to student movement and discontinuities of learning.³ The problems of progression have been highlighted and made more complex due to the proliferation of certification, related in particular to the process of vocationalisation of the late secondary curriculum and the development of work-based schemes like YTS.

¹ A module can be defined as "A measured part (or course) of an extended learning experience leading to the attainment of a specified qualification(s), for which a designated number (and, possibly, sequence) of modules is required, with the group of designated/required modules known as the programme, the programme of studies, or a modular-course structure". (Ernest Theodossin *The Modular Market* p.9. (FESC Studies in Further Education 1986)

² Throughout the paper a distinction will be made between the term 'modular developments' which refers to varied and often fragmented attempts to develop a modular curriculum within qualifications or institutions e.g. GCSE and 'modularisation' which will be used to describe the development of modular systems spanning qualifications and used as a means to alter their progression relationship to one another.

³ The problems of the relationship between divisions in the curriculum and duplication of certification are explored in *The Politics of Progression* - Ken Spours (Centre Working Paper No 2 February 1988)

We are therefore faced with systemic problems which require structural solutions. It can be argued that only a planned comprehensive curricular framework 14-19 can provide clear steps and stages of development, rationalise certification and bring academic and vocational learning into closer dialogue. It can also be argued that these are the preconditions for ensuring progression both in terms of student movement between courses and sites of learning, and more important still, to aid the continuity of learning and accumulation of credit towards recognised awards.

This paper focuses on the possible role of modularisation to reform qualifications in order to provide clearer and logical progression routes. It will therefore try to analyse a number of themes and problems in order to:

- Place modular developments within the wider context of debates about reforming and modernising the curriculum and the economy.
- Assess local progression strategies and the need to take more seriously the issue of continuity of learning than has so far been the case.
- Examine the problem of isolated approaches towards modular development in England and Wales and how far these meet with progression purposes. To then contrast these with the purposes of the Scottish Action Plan.
- Examine in more detail the ways in which modularisation (modular systems) could address a number of progression issues in the 14-19 curriculum and to pose a series of questions for discussion.
- Discuss long-term and short-term perspectives on ways of moving towards a modular structure to promote progression.

Modular developments and different approaches to modernising the curriculum

New divisions of thinking within education have emerged recently about the ways in which the curriculum should be modernised to improve student motivation and performance. On the one hand there are the proposals for the National Curriculum, supported by the DES and SEAC, which promote the idea of clear benchmarks to act as motivators to students and eliminate differences in expectations of students. Clear centrally-determined criterion-referenced standards are seen as the modernising element of this initiative. Many professional educators however think that testing and its public uses will rigidify the curriculum and that the framework of subjects is regressive.⁴

On the other hand there have been varied attempts at modular development to make the curriculum more flexible and responsive to new economic and technological developments, and in particular to secure a closer relationship between vocational education, training and the workplace. Not surprisingly the Training Agency and NCVQ support modular approaches to curriculum development. At the same time however, many educationalists disenchanted with exam-oriented, year long courses have

⁴ Richard Aldrich *The National Curriculum: a historical perspective* (The National Curriculum Ed by Chitty and Lawson, Bedford Way Papers/33) finds a close relationship between the curriculum proposed in 1987 and the regulations issued by the Board of Education in 1904, the only major difference being that Manual work/housewifery has been replaced by Technology.

sought to create a curriculum more responsive to the needs of particular groups of students. At the level of educational philosophy, modular development has been embraced both by supporters of the free market and those advocating a more comprehensive curriculum. In the 1980s with the emphasis upon the 'market', and the problems of surplus provision and declining demand, "modularisation and credit transfer have now become the 'academic currency' of the market place"⁵

Ernest Theodossin, drawing on the work of Toffler,⁶ has remarked upon the relationship between the 'demassification' of educational provision in society and the development of customised packages to meet the particular needs of underachieving students who, within a traditional academic system did not have much choice. He also sees this as part of a wider trend of promoting greater choice in the consumption of services not only in education but in other areas of public life such as health and housing.⁷ But it is possible to take the analysis much further and to look at the relationship between modular flexibility in the curriculum and new tendencies emerging within the Economy; the impact of new technologies, productive methods and development of new working practices.⁸

Considering these developments within the State and the Economy, the linkage of 'modular' and 'modernising' is clear. Modular developments are seen as more responsive to economic change and are capable of extending educational involvement. It is claimed that they can motivate and produce a sense of achievement amongst those students who have tended to fail in a traditional long-course academic curriculum.

The apparent coincidence of interest of employers and educationalists in modular development however, can be partially explained by the relationship between the expansion of the student population in the 1970s and 80s, growing youth unemployment and the process of vocationalisation. In response to changes through comprehensive reorganisation in the 1960s and ROSLA in 1973 there came a reappraisal of the curriculum in the 1970s as schools had to cater for an increase in less motivated students. Added to this was the beginning of the process of vocationalisation of the curriculum marked by Callaghan's speech at Ruskin College in 1976. Some commentators see modular developments as part of this reappraisal and a "second part of the comprehensive revolution. The attempt to devise and implement a comprehensive curriculum for all pupils"⁹ The 1980s have seen further developments both in the extension of qualifications to wider groups of students through pre-vocational, vocational and access courses. The agreement between employers and educationalists can also be found in issues of access as the growth of the service or tertiary economy creates greater demand for adult return to learning and retraining. Modular approaches to the curriculum have featured significantly in TVEI and YTS and as we will see in the next section, in a more varied and confused way within CPVE and BTEC courses.

But these 'extensions' of the student population and the new curriculum developments to meet their 'needs' have produced major problems of progression. All of these initiatives have developed in a piecemeal way and fragmentary way.¹⁰ 17+ certification

⁵ Theodossin p29

⁶ Alvin Toffler *The Third Wave* (Collins 1981)

⁷ Theodossin p 2

⁸ The relationship between curriculum developments and these wider modernising tendencies in the economy are touched upon in a Centre Working Paper *Beyond Vocationalism: A New Perspective on the relationship between Work and Education*. - Ken Spours & Michael Young (April 1988)

⁹ Peter Watkins - *Modular approaches to the secondary curriculum* p 12 (SCDC 1986)

¹⁰ These new developments are the central problem discussed in *Progressing from Vocational Preparation* - FEU 1982, in which it was suggested, perhaps mistakenly, that there should be an new award at 17+ - CPVE.

in response to youth employment, was developed before reforms of the 14-16 curriculum. Not surprisingly the two frameworks do not match up. Pre-vocational certification has developed in co-existence with traditional awards in both the academic and vocational spheres leading to problems of devaluation and more complex stratification of certification.¹¹ The proliferation of courses from differing exam boards has meant that there are no general agreements between them regarding progression. The issue is ultimately left to institutions and local receiving tutors. The result has been discontinuities, barriers to movement and real confusion both amongst students and providers as to progression opportunities.

Flexibility and the different purposes of modular approaches

In the preceding sections, three general purposes of modular developments have been identified - flexibility, more accessible learning for an extended student population and progression. While there may be some agreement about the virtues of a modular curriculum around the purposes of flexibility and access to learning, the issue of progression, I think will reveal the different emphases of employers and educationalists. The private employer is basically interested in two types of flexibility - the flexible relationship between state sponsored training, education and labour requirements and the flexibility of labour itself to be redeployed and co-operate with the introduction of new technologies. Educationalists are not *per-se* opposed to these purposes but would add another, particularly in view of the potential conceptual demands of new technologies. An educational expectation of modularisation is that it offers the potential for the student to develop from a practical grasp of questions to a more conceptual understanding; to overcome the division between mental and manual labour and the new sense of self-management and flexibility that results. Genuine flexibility from the point of the student therefore, is about movement within a unified and non-stratified system of certification, to learn more at their own pace and to accumulate credit for access to the next level of learning. This is of great importance post-16 when students are maturing and are often more ready for disciplined study. Training flexibility and access to learning can accept more fragmentary modular developments but progression demands comprehensive modular systems (modularisation).

From modular developments to modularisation

Modular developments in schools have in the main been seen as a means of increasing student engagement, performance and a diversification of recognition.¹² In the post-16 area however, the situation of overlap and duplication of certification, confusion of progression routes and complex divisions in the curriculum is particularly acute as academic, vocational and pre-vocational certification compete with each other as many students embark upon a critical transition from school to working life. Modular approaches to curriculum change therefore may have different purposes pre-16 and post-16.

¹¹ Stewart Ranson termed this process of stratification 'tertiary tripartism' in *Towards New Forms of Tertiary Tripartism in Certification, Selection and Control* - Ed' by P. Broadfoot (Falmer 1984)

¹² Unification as a means recognising different dimensions of development (self-expression, application of knowledge, personal and social skill and motivation/commitment) was the distinctive contribution of The Hargreaves Report - *Improving Secondary Schools* (ILEA 1984).

At present a series of 'molecular adjustments' are taking place both within CPVE and BTEC First following reviews and evaluations of both awards.¹³ While these indicate some positive movement they are nevertheless unequal to the scale of the problem and highlight the need for more ambitious thinking about developing modular systems to fully embrace academic, vocational and pre-vocational qualifications. The rapid decline in the number of 16-19 year olds through the 1990s will provide added economic incentive to find a more rational and efficient system of provision.

Developing Dimensions of Progression

The concept of progression is basically reducible to two interlocking dimensions and problems. First the *movement of students* between courses and sites of learning and the problems of barriers to movement. This has been highlighted by the problem of devaluation of certification and organising progression from CPVE though the issue is a more widespread one. On the other hand there is the *continuity of learning* and the problem of mismatches or repetition. While this progression criterion applies to any qualifications structure it has been particularly highlighted by the vocationalisation of the school curriculum 14-16 and the transition to 16+; an issue made more urgent by TVEI extension.

Progression as student movement

It is appropriate to begin our analysis at a local level at which most discussions and practical developments regarding progression have taken place. The current emphasis on progression within LEAs and between schools and colleges is focused on the development of more flexible forms of student movement between courses. These local initiatives focusing upon new practices such as creating local progression handbooks and interview through the presentation of portfolio, have arisen principally from trying to organise progression from CPVE. The implications of these practices however, have wider ramifications. These more flexible forms of course access can be applied to adult returners or students coming from provision other than CPVE, and have the general positive effect of raising the consciousness of college receiving tutors about the variety of ways of recognising prior learning. Above all, these local progression strategies tend to provide a practical focus of co-operation between schools and colleges and as far as we know appear to be producing results.¹⁴

¹³ BTEC circular to CEOs and LEA Advisors/Inspectors Arrangements for use of BTEC Units within CPVE (19 April 1988) gave notice that BTEC First Units could be offered as part of additional studies within CPVE and therefore now available in schools and not just colleges. In a news release A New Look CPVE (17 May 1988) the Joint Board announce two significant developments to broaden the appeal of CPVE - a more flexible timescale for the CPVE framework so it can be used in relation to A-levels and a more systematic approach to vocational studies so that they can be recognised by NCVQ and linked to CGLI and BTEC in a system of credit accumulation.

¹⁴ Progression rates from CPVE to BTEC National or A-levels look promising according to a small sample of 296 students shown in Destination of CPVE students 1986/7 (ILEA Research and Statistics February 1988). There was 45% progression to FE of which 44% to National or A-level. However, the impact of local progression practices on these figures is still unclear. There is an evaluation of 'personal progression strategies' in Evaluation from CPVE in Newham LEA (Centre Report No 5) December 1988.

Progression as continuity of learning or articulation

But local progression strategies have their limitations. They are labour intensive and despite the role of LEA policies in trying to produce a sense of obligation to keep to agreements, local arrangements are subject to the whim of particular college departments or individual tutors. But their main limitation is related to the way in which they only address one dimension of progression - student access from pre-vocational provision and breaking down barriers between courses. They are principally a way of getting round duplication of certification by concentrating on creating a common set of procedures for application and interview. In other words, they are not a system for unit credit accumulation and therefore do not really address the issue of continuity of learning.

We now require a new and more ambitious phase of progression strategy - opening up the more complex question of the reform of the whole framework of certification 14-19 rather than singular responses to a problem of duplication of certification which has been highlighted by CPVE. In this respect we are in search of a framework which can be commonly applied across different forms of accreditation, across the transition from pre-16 to post-16, between different institutions and sites of learning to create a common framework for credit accumulation. These developments will require a new era of co-operation between examining and validation bodies and local practitioners. Local progression arrangements have up until now been a substitute for a more active partnership between local institutions and examining and validating bodies (EVBs). But if the emphasis of progression is to shift towards continuity of learning then the relationship between validators and providers will have to become a more openly collaborative one as both seek to develop a structure for modular curriculum and unit credit accumulation. These developments raise fundamental issues of autonomy and co-operation between EVBs and local institutions and of relationships of multi-agency provision in a modular structure.

The Progression purposes of modularisation

If our major purpose is to reform qualifications 14-19 into a more unified structure then we need to create a comprehensive framework of modules capable of providing the following:

1. **A system of credit accumulation** capable of facilitating movement across a number of divisions and transitions:
 - a. Division between academic and vocational learning.
 - b. Transition between pre-16 and post-16 qualifications.
 - c. Division between institutions and sites of learning - school, college and the workplace.
2. **A flexible framework** in which there can be both choice and exploration, pacing of learning as well as specialisation. It also means opening up the curriculum and qualifications to new groups of students and relaxing the relationship between age and qualifications.
3. **The development of the content of education and training** (new knowledge and skills emerging from economic, technological, social and cultural developments) to be reflected in school knowledge and not just at University level. Within TVE1 for instance new modular titles have emerged e.g. Food Sciences, Urban Studies, Performing Arts, Economic Awareness etc; these developments can pose a new possibilities for relating vocational and academic learning.

Existing definitions and purposes of modular developments

"A modular system is not an end in itself, but a means to achieve reform and an effective, efficient qualifications system"¹⁵

How far do current modular developments meet with these progression purposes?

- Is there a common understanding of the term modular?
- How far have modular developments encouraged an open relationship between qualifications?
- How far has a system of unit credit accumulation and transfer been put in to operation by any of the exam boards?
- How far have efforts at rationalisation succeeded and what should be expected of NCVQ?

The problem at the moment is finding a consensus amongst the major agencies in the field as to what is meant by modular. Between the EVBs, who as self-financing agencies follow a market-led and voluntaristic approach to certification, there are differing perceptions of the role of modules.

The Joint Board and CPVE

Within CPVE currently there are three types of modules - introductory, exploratory and preparatory reflecting different stages of the process of vocational orientation. The problem lies not so much in the different types of module but the absence of common rules for attainment. The preparatory modules which are based upon grouping of occupational skills can be assessed discreetly, whereas the broader modules are assessed in relation to the CPVE Bank of Statements. There is no minimum duration requirements in relation to CPVE modules. The result has been that there is little consensus at a local level as to what a CPVE module actually represents and it is not surprising that they do not figure seriously in local progression agreements.¹⁶ In this very important sense CPVE currently is not a modular system because its design base does not really encourage unit credit accumulation and transfer.

The Joint Board however, is now undertaking a reform of its modules following the evaluation of CPVE. Two changes are indicated; first the introductory and exploratory modules will be streamlined with clearer statements of expected outcomes. Second, preparatory modules will be linked to CGLI, BTEC and other awards in a system of credit accumulation.¹⁷

BTEC and its grouped integrated awards

BTEC awards reflect a different emphasis with course design based upon the grouping of units within discrete vocational areas together with the integration of core skills. The term 'module' is used in a very limited sense when referring to the weighting of units required to achieve the full award. BTEC awards are therefore internally modular but teachers do not see them as being modular in relation to other awards.¹⁸ In this respect, the public statement from BTEC, that First Award units can be achieved within CPVE

¹⁵ Mick Farley Examination Post 16: the need for radical reform in 'The Revolution in Education and Training' edited by Ranson, Taylor and Brighouse (Longman 1986)

¹⁶ A sample of local progression agreements from ILEA, Newham, Essex and Hounslow all place the major emphasis upon the demonstration of core competence rather than the acquisition of particular modules.

¹⁷ A New Look CPVE - CPVE Focus May 1986

is a new departure. But the overall position of BTEC with regards to modularisation is essentially ambiguous. Its ambivalent attitude was reflected by a lukewarm statement on modular development (November 1985) which concentrated on a restatement of the argument for core skills and integration ¹⁹

GCSE and modular developments

This is a scene of very uneven developments: some are modular and some are not. Compared to BTEC grouped integrated awards, GCSE subjects present a different set of problems because GCSE modules are aggregated to achieve a subject grade, whereas modules of vocational awards can be accumulated and recorded on a certificate e.g. the Scottish National Certificate. ²⁰

Nevertheless the recent limited practicalisation and unitisation of academic curriculum has created conditions whereby subjects or their sub-units can assume a position within a 14-18 modular framework. A source of development and experience has been individual schools and LEAs responding to TVEI in which there has been the unitising of GCSE. ²¹ Some of these schemes offer dual certification with RSA or BTEC certification in the secretarial and business studies area. ²²

These have been responses to particular initiatives like TVEI or to the problems of student motivation and achievement. None of these experiments however appear to have the capacity to develop credit accumulation across the whole 14-19 curriculum though the desire to do so is frequently stated. The task therefore of modularising GCSE and A-levels has to be seen not only in terms of unitising subjects but in relating these to other kinds of qualifications which adopt a different structure and purpose. At present however there is serious doubt being cast across plans for modular development of GCSE which goes beyond the unitising of an academic subject. SEAC appears to be rejecting modular proposals from exam boards and it is difficult to tell at this stage whether this is an 'ideological' rejection of modular developments or as a result of problems with specific modular proposals.

NCVQ and competence-based outcomes

"The present pattern of schemes and qualifications post-16 is complicated and confusing. It remains to be seen whether the proposed NCVQ will be resolute enough and have sufficient power to bring about the radical reforms needed. Modularisation would be but one step on the way to bringing some sense of order to the jungle which continues to grow in density. It must be noted that the RVQ report (MSC/DES 1986) is equivocal in its comments on modules, and does not give more than cautious recognition to the Scottish 16+ Action Plan." ²³

¹⁹ In Circular 15 -BTEC Qualifications and Certificates of Achievement: The Framework p 9 there is statement that 50% of BTEC First Diploma can be achieved/exempted by previous qualifications/experience but nobody really knows about it and virtually all BTEC providers operate discrete and grouped integrated approaches to BTEC courses.

²⁰ Elaine Treasure Supporting Modular Curriculum Development (BTEC November 1985)

²¹ Christine Southall Credit Banking in 'Modular Curriculum' Ed by Bob Moon (1988)

²² In Modular Approaches to the Secondary Curriculum there is a section which surveys sites of innovation - these range from schools in Wales (Ysgol Emrys ap Iwan) to schools linked by TVEI (the Somerset schools Holyrood, Chard and King Alfred School) to an LEA modular framework in Leicestershire or a credit bank in Oxfordshire.

²³ Bob Moon Introducing the Modular Curriculum p 9 in 'The Modular Curriculum' (1988)

²⁴ Eric Tunworth Modularisation and the new curriculum: some technical issues p 220 in Modularisation and the New Curriculum (FESC Report Vol 19, No 4, 1986)

NCVQ is different from the previous three examples since it is neither a provider nor examining board as such but an initiative which aims to bring some sense of order to area of vocational qualifications. But as implied in the previous quote some think that NCVQ has experienced a failure of nerve in its refusal to propose a modular structure as the reforming strategy.²⁴ But it is arguable that this failure to propose a structure is a reflection of a more fundamental problem of NCVQ strategy which has its roots in the remit from RVQ.²⁵

The reluctance of NCVQ to endorse a modular system with a definite delivery pattern is a reflection of the view that work-based competences can be achieved in a variety of ways in different places. They assume that there is no relationship between applying competence and how it is learned and this in itself is a reflection of the narrow concept of competence as 'employment-led'. While NCVQ is interested in the accreditation of prior learning where it can be demonstrated that it supports employment-based competence, the only way in which NCVQ will recognise a module is as a unit of outcomes rather than a unit of *outcomes and learning*.

The emphasis upon 'outcomes' is also related to the view that the role of accreditation should shift to the workplace and employers and away from traditional providers who have been seen as operating restrictive practices and excluding many students who could have achieved qualifications. NCVQ have promoted their role not only as modernisers bringing order to the chaos of vocational qualifications, but as liberalisers of a restrictive system and claiming to be genuinely in favour of student-centred learning by arguing that credit should be given when and where its due.

There are serious doubts however, whether NCVQ's current preoccupation with standardising work-based competences, particularly in the service sector and at operative level, will improve the progression prospects of those who confine themselves to NVQs. The Council intends to establish a framework of levels of vocational qualifications in occupational sectors with clear lines of movement and accumulation between each. However it remains to be seen how trainees/employees will be encouraged to move between levels 1-4 within each occupational sector when each level is based upon types of jobs. To progress between levels may in fact involve getting promotion or at least to be seen by the employer as suitable material. Secondly, there is little indication that the achievement of specific work-based competences at one level prepares trainees for the demands of a higher level. This form of preparation is generally seen as being provided by more generic skills and knowledge.

Within the whole range of 14-19 certification the major problem of progression is seen to be situated on the relationship, not simply between vocational qualifications, but between academic, vocational and pre-vocational certification and the institutions which tend to align themselves with each of these. In this respect NCVQ appears to have painted itself into a corner.

In fact there is evidence that NCVQ have contradicted the aims of the most recent White Papers on training. In 'Working Together' one of the nine tasks given to NCVQ was to:

"maintain effective liaison with those bodies having responsibilities for qualifications which give entry to, and progression from, the system of vocational qualifications into higher education and the higher levels of professional qualifications".²⁶

²⁴ Mick Farley - Introduction to Modularisation and the New Curricular p 208

²⁵ The Review of Vocational Qualifications in England and Wales: A Report by the Working Group (April 1986)

²⁶ Working Together - Education and Training p 21 (July 1986)

In their own literature, the Council diluted this to read:

*"set up effective liaison with bodies awarding vocational qualifications".*²⁷

This latter interpretation is much narrower than the task given in the White Paper which indicated a much more ambitious notion of progression. In the most recent White Paper 'Employment for the 1990s' the commentary on NCVQ states that to:

*"get the NCVQ accreditation, a qualification must be based upon competence determined by the employers in industry and have sufficient breadth to be the basis of further personal development".*²⁸

NVQs have the former requirement but current exemplar units do not possess enough breadth for the purposes of personal development.

By defining competence in narrow employment-led terms, NCVQ proposals for unit credit accumulation²⁹ not only appear to ignore important aspects of government policy but more importantly they cannot aspire to be the unifying initiative to bring together the academic, pre-vocational and vocational spheres.

Modules can be defined *both* in terms of learning time and outcomes but the imperatives to coherently plan provision in schools and FE together with minimum guarantees of learning duration are necessary for any form of structured curriculum. That is why a modular structure is attractive to educational providers - it balances flexibility with predictability. NCVQ proposals for unit credit accumulation could be *part of this structured system*, insofar as modules within a framework have clearly stated outcomes, but in their narrow form they cannot be *the basis* of a comprehensive modular structure. The educational challenge for NCVQ should be to support a framework and method by which new and flexible structures within education can find application in the workplace and ways in which employers can contribute to an overall system of qualifications rather than attempting to dominate it.

Scottish Action Plan as an example of a modular system

*"Although modular systems have been developed in other countries, the Scottish framework may be distinctive by virtue of its comprehensive national scope, with modules designed to a uniform specification, criterion-referencing and the specification of modules in terms of outcomes and the absence of levels, grading or the formal grouping of modules"*³⁰

The Scottish Action Plan is a modular structure and system of over 2000 modules covering technical and vocational education at 16+ created by the SED in 1984. It is large-scale and provides accreditation for learning which may take place in schools, colleges, community education and the workplace. Its principal aims have been cost effectiveness and avoiding duplication of certification, emphasising the integration of education and training, and increased co-operation between providing institutions.

²⁷ Accreditation Procedures p2 (NCVQ January 1988)

²⁸ Employment for the 1990s p 33 (Department of Employment December 1988)

²⁹ The first draft of proposals on units and credits are contained in a NCVQ consultative paper The accumulation of credits towards a national vocational qualification (June 1987)

³⁰ The Organisation and Content of Studies at the Post-Compulsory Level in Scotland - David Raffie & Nils Tomes (Centre for Educational Sociology, University of Edinburgh, May 1987)

Within the structure there are three different kinds of module (general, specialist and integrative) which students can accumulate at their own pace. Modules, usually of a notional 40 hours duration are accredited by a single National Certificate. There is also the room for flexible development of new titles and employers can offer or suggest modules.

What can we learn from the Scottish Action Plan? I do not want to go into detail at this point, because this is the substance of the article by Donald Mack. In broad terms however there appears to be three major contributions that the Scottish Action Plan can make to the discussion about structural reform. The first and main lesson is that large-scale modular structures can be created if there is the political and educational will and it provides an alternative model to the piecemeal and fragmented developments we have seen in England and Wales. Secondly, the Scottish Action Plan points to the fact that a comprehensive modular system has to be underpinned by a unified examining and validating structure. Thirdly and possibly of most value, it can provide a continuing commentary on the problems of creating coherence and progression of learning within modular frameworks and the challenge of creating a framework which can fully embrace academic awards. This is particularly relevant in considering the decision of the the Scottish Action Plan not to have grading within modules and the difficulties which have been faced in the modularisation of 'Highers' and their incorporation into the Action Plan. Additionally, and not least, there is the issue of resources and staff development the lack of which have been seen as a major threat to the successful implementation of the Action Plan.³¹

Towards a Modular System

"Any modular credit system needs to articulate with any preceding and subsequent stages of education and training. Clearly, the more extensive the modular credit system, the less there is outside it to articulate with, and the more likely we are to see real bridges and ladders in place. If one favours a modular credit system, then logically one favours wide application to embrace pre-16 education, general education, higher education and advanced training"³²

The following section attempts to outline a unifying perspective and at the same time comment on some of the short-term changes which might take us in this direction. There is an implicit assumption that, even if most educationalists wanted an Action Plan approach of a single qualifications structure, it could not be realised in the short-term and we therefore have to commit ourselves to a long-haul strategy. In order to clarify a strategic approach I have located two variants: one of which identifies elements of a comprehensive structure and the other, a short-term approach informed by the longer-term perspective.

The long-term perspective: a comprehensive modular system 14-19

1. A comprehensive structure of modules

The structural framework of qualifications should be *comprehensive* in scale both vertically and laterally. That is, it should embrace various stages of development from

³¹ Mick Roebuck *The 16+ Action Plan in Scotland* (Combe Lodge Report Vol 18 No 2, 1985 p. 83)

³² Jenny Shackleton *The Significance of modularisation for local education authorities* p 215 (FESC Report Vol 19, No 4, 1986)

14-19, different modes and sites of learning (education-based and work-based and therefore academic and vocational learning). The structure of modules should encourage flexibility of learning and achievement insofar as permitting different routes or combinations of learning to take place to meet the needs of both students and employers. A framework must be able to encourage both breadth of experience and specialisation. We must learn in this respect, lessons from CPVE in which this dual capacity was never made sufficiently clear. The framework would also have to allow for breaks and return to learning - greater continuity in certification between formal schooling and post-compulsory education and training.

Defined in this way a comprehensive modular system is qualitatively more ambitious than the Scottish Action Plan which is still confined to the vocational/technical sphere and starts at 16+. It may also be the case that we have to be more cautious in our pedagogic assumptions than in the Scottish Action Plan and accept levels and grading in order for the structure to incorporate academic certification and therefore be more comprehensive. The issue of the relationship between flexibility and coherence apparent in the Scottish Action Plan raises a number of factors in the context of England and Wales.

- The development of common modules (both in duration and content) to be offered by different institutions and which can be accredited to both academic and vocational awards.
- The development of recommended programmes and routing in order to promote coherence of study.
- Establishing the bounds of exploration and the degree to which total freedom of movement is accepted.
- Evaluating the role of 16+ exams in the process of unit credit accumulation.

2. A broad student population

Any modular structure should try to accommodate the vast majority of students. It should be essentially a structure which incorporates students at different stages and accommodates different paces rather than being premised upon 'high flyers' or the 'disaffected'. The current system of norm-referenced grading or profiled assessment of academic and pre-vocational certification, tends to polarise constituencies of students. What are the practical implications of such statements for modularisation? By implication it is a call for definite standards and criterion-referenced assessment together. If an assessment process of pass/fail is adopted then there has to be a clear strategy for students who fail in the first instance to meet modular requirements. If students cannot pass modules the issue is how they can be encouraged and supported to do so rather than making 'relaxations' and being less demanding, particularly of working class students.

3. A single and uniform system credit accumulation and transfer

There would therefore be a need for a consistent and reliable criterion-referenced assessment system with clear levels to allow progression of learning from one level to another or one site of learning to another. It would have to be a system of assessment which was clear to the student and teacher, employer, and higher education.

A criterion-referenced pass system (as operated in the Scottish Action Plan) for modules appears to offer the clearest progression option but the issues of standards will have to be fully confronted. There are several major issues and questions concerning assessment:

- Developing a clear distinction between different levels or sequencing of modules if grading within modules is to be avoided.
- A new and more well-resourced system of moderation. Any radical reform will need resourcing and new systems need to quickly establish credibility.
- How can the assessment system be time-economical and manageable to operate at classroom level?
- How can assessment systems be used to increase the level of accountability between teacher and student?
- What kind of counselling and guidance system will be needed to help with choice and progression through the structure?

5. A unified examining and validating body

One of the unavoidable lessons of the last five year's experience of vocational preparation in England and Wales is that competition between self-financing exam boards leads to inefficiency and harms progression. There is a clear case for a single examining and validating body for all certification adequately supported by public funding and not expected to run as a business. But since the Government will certainly not agree to such developments the question in the foreseeable future is how co-operation between the exam boards can be increased and competition reduced to secure a system of unit credit accumulation.

6. A learner-led approach to modularisation

Modular structures can be seen as a compromise between the needs of students (access, flexibility, choice, attainment, progression etc) and those of providing institutions (planning provision, timetabling etc). But it is an equilibrium which can easily begin to tilt towards institutions as the framework grows, becomes complex with the major issue becoming its management. It also has to be acknowledged that unless there is a constant emphasis on producing changes in attitudes, modular delivery can perpetuate conservative educational practices.

If however modular frameworks are to really cater for a broad spectrum of students, adults as well as 14-19 year olds, it will mean a constant struggle to 'humanise' the system. This perspective has been raised through the 'learner-led approach to institutional development which calls for a dramatic change in attitude towards student achievement.³³ Taking a more learner-centred approach will mean setting individual achievement targets, supporting individual progression, flexible applications of learning time-scales, varied use of teaching methods, providing personal support and guidance, recording of individual achievement etc.³⁴

Inevitably these are in tension with some of the planned elements of a modular framework. It is as well then to remind ourselves at this stage that while it is easy to get carried away with the structural possibilities of modularisation, its first and ultimate aim is to serve and enable the individual student. Creating a modular structure therefore carries with it a parallel responsibility of promoting a student-centred view of achievement and the emphasising the real individual flexibilities that the system will have to demonstrate.

³³ Jenny Shackleton - The Professional Role of the Lecturer in 'Planning the FE Curriculum: Implications of the 1988 Education Reform Act' Ed' by Kedney & Parkes (FEU 1988)

³⁴ It has been argued that there is a congruence between modular developments and recording of achievement Bob Moon p. 16

A short-term perspective: an interim framework at 16+ based upon greater co-operation between the exam boards

Despite the centralising tendencies of the National Curriculum, the relationship between educational structures in England and Wales is particularly diffuse, making large-scale reform a difficult proposition. This means finding an interim strategy of creating local modular frameworks within the context of there being a number of competing EVBs. It could mean creating a loose framework within which there is limited competition between different modules of qualifications rather than cut-throat competition between different and incompatible types of awards. The major change being the creation of a new logic; of putting the different exam boards and their qualifications into dialogue by the common process of creating a modular structure (modularisation).

The immediate focus of reform should be 16+ since it is subject to less centralising tendencies than the pre-16 curriculum. In the first instance it may be best to try to unify vocational/pre-vocational certification in a way similar to the focus of the Scottish Action Plan. There is certainly a local demand for this in the context of problems around one year provision of CPVE, BTEC First and GCSE. This process could give an impetus to co-operation between schools and colleges; a problem aggravated by institutions tending to align themselves with particular forms of certification rather than seeing themselves in partnership for progression.

We need to find a framework for awards at both local and national level. But any interim solution will not have the simplicity or clarity of a fully unified system since it means arriving at compromises between EVBs, institutions and other national agencies. Nevertheless there are a number of measures which may be realisable within current political conditions which could open up a new logic of co-operation between EVBs and their certification, institutional providers and education and employment.

1. Bank of local modules to be accredited to existing awards

The starting point is creating a bank of modules adapted to an agreed format and new ones created which meet with the broad aims of various exam boards.³⁵ To be able to relate different modules more easily to both academic and vocational awards will either require their adaptation or development to contain a higher synthesis of knowledge and skill than shown by most 16+ units offered at present, or the development of a balanced personal programme of modules which can be accredited in various directions.

A major question is whether 'enhancements' or 'fundamental components' are built into all modules or into the overall programme of students. The modules would also have to be shorter than the 90 hours of current BTEC Units so that there can be a more varied programme within an academic year. While many GCSE units are between 20-40 hours, a starting point for modularising grouped awards might be to reduce 90 hour modules to the lower limit of 60 hours so they can be offered twice in a year.

Students could complete a set of modules and then have these accredited to part of or the whole of an existing award. Given that the achievement of the student is not known in advance they would register with an EVB upon completion of particular modules rather than at the beginning of a course.

³⁵ This has already been attempted through the Mainframe Project for accrediting YTS and in various LEAs in relation to TVEI.

The current strategy being followed by both BTEC and the Joint Board is moving to a mild form of 'deregulation'. Students can take BTEC First Modules in schools as part of CPVE and then complete the whole of the award at a later stage or have the BTEC units listed on their CPVE certificate and hope that these will be recognised in their own right. There will however have to be a general recognition that accumulating credits is legitimate. At present relaxing time constraints is difficult due to the fact that, unless students recognise that they are accumulating credit within a modular system, they are under pressure to complete and achieve the whole of an award in a year.

2. Greater co-operation between the exam boards and a new role for the Joint Board

The EVBs could agree to offer their modules/units within a broad national framework. The issue would be adaption and equalisation of modules, so that they represented the same level. As with local pilots, there would be the need to creating new modules and to fill gaps, particularly in the area of broad vocational education which bridges academic learning and occupational training (economic awareness, technological understanding, study of work process etc). I think there would have to be a feasibility study and local pilots prior to this so that the EVBs could study the implications of accrediting 'common modules'.

If there was a more serious co-operation between EVBs to establish a modular system than is evident in the current adjustments of qualifications, there could emerge a new and more strategic role for the Joint Board. The proposed merging of the Joint Board and Joint Unit is a step in the right direction. The EVBs could offer various modules and the Joint Board/Unit could provide the curriculum framework but not its own modules or certification in the form of CPVE. Many think that this was what the Joint Board was actually created for in 1983. In one sense this is the way things are gradually moving, with CPVE being used as a curriculum framework in relation to A-levels and having less significance as a form of certification. In its role as custodian of the curricular framework the Joint Board could offer the 14-18 certification upon which the modules and subjects are listed. The other EVBs could still offer full awards, which fall into the framework. The issue of moderation of the framework would have to worked out but clearly a major role would be with the Joint Board because of its central curricular responsibility.

These developments would give an added boost to vocational exploration and open up closer co-operation between schools, colleges and the workplace. Many of the modules could be run in schools because they would not all be occupationally-oriented. Occupational specialisation post-16 would require greater school-college-workplace co-operation. But to move in this direction involves compromises. The tight structure of group integrated awards such as BTEC First Diploma, would have to be relaxed to *allow students to undertake a wider range of modules* than is effectively permitted at present and to become part of a wider array of provision in which a student may combine more fully, academically and vocationally-led learning. It would mean a broadening of the student population using the local framework. The rules of restriction (permitting only certain modules to be accredited) would have to be replaced by guiding criteria to help tutors to create coherent routes for students through the wider framework.

3. Integrating factors: vocational knowledge and core skills

An important question always raised in relation to modularisation is the problem of developing coherence and integration. While broad vocational knowledge in the form of general modules will be an important integrator, a common list of core skills could also

be used to assist in the integration and application of learning. This could be implemented by the development of broad and core skills the development of which is supported by all tutors. In some cases particular modules could be created to guarantee important areas on the timetable e.g numeracy, communications and IT.

The issue of integration raises the importance of *overall programme design* and co-operation between teachers and different agencies to ensure a broad offer of modules and the creation of particular combinations of modules to ensure coherence of content. But it has to be acknowledged that modularisation cannot achieve full integration e.g. a fully integrated working day, but from the point of view of coherent study this is not in itself necessary. The real issue is to help students to relate theory and practice and not simply for learning to mirror everyday activities.

4. Teacher involvement and a partnership of processes and structural change

It has been often commented that modular developments do not sufficiently change attitudes and that integrated courses are more effective in this respect. In some ways this appears to be the case particularly if modularisation is seen to be the sphere of the curriculum planner rather than the practising teacher. But if modular developments are part of a process of creating an overall programme for students, particularly at a local level, there are many learner-centred issues. Any local pilot scheme involving FE and schools will have to synthesise the notion of flexibility, coherence, integration, resourcing and support, staff development - to create a structure to support achievement and progression.

5. Local modular frameworks and progression

The creation of local modular frameworks will gradually bring a new emphasis to 'course progression' as criteria for course entry will be seen in terms of previous modular achievement. Where does this leave local progression strategies which have emphasised interview through portfolio as a means of progression? In effect credit accumulation in the near future will mean that there are three means by which a student could enter post 16 courses - GCSEs, portfolios to meet course progression criteria or modules.

Progression modules could take two forms - either they are technical modules (Engineering systems 1 leads to Engineering systems 2) or they can be broader modules which attempt to develop particular skills and understanding to cope with say National level courses.³⁶ Only when a modular system becomes more comprehensively established will progression become predominantly based upon credit accumulation. This will be the point at which progression as student movement gives way to progression as the continuity of learning.

³⁶ The Evaluation of Progression from CPVE in Newham LEA (December 1988) has revealed that both local CPVE schemes and interview through portfolio has failed to produce significant progression to National level in Science, Computing and Engineering. A strategy under discussion will be to develop specific modules to meet the progression requirements of these courses to be offered within a 16+ foundation framework.



This paper:

- i) *describes the benefits which could be gained by producing a post-16 credit accumulation and transfer (CAT) framework, which encompassed all levels and types of qualification; from Key Stage 4 of the National Curriculum through to the HE masters/professional qualifications;*
- ii) *introduces the concept of 'an open system' and the potential this has for allowing the system to grow from the bottom up, in a voluntary manner over time;*
- iii) *argues the case for qualifications within this framework to be based upon coherent collections of outcomes, to be described as 'units';*
- iv) *describes the mechanism by which units at the same level can be given different credit values dependent upon the extent of achievement they require, thus removing the necessity for an artificial and possibly damaging requirement for units to be of the same 'size';*
- v) *describes the general features that such units must possess.*

The benefits of a fully developed framework require more examination of:

- *the allocation of units to levels (dependent upon the level of achievement required);*
- *the categorisation of units into types (dependent upon the type of achievement required).*

However, the work we have undertaken so far (or synthesised - since we are fully aware of how much thought and even action has gone on elsewhere) has created so much interest and debate that we decided that a discussion paper at this time would be valuable.

There seemed to me to be two equal but opposite risks:

- *The reward to be gained is so great that enthusiasts may build too many hopes and schemes on what turn out to be faulty foundations.*
- *Existing preconceptions, ideologies and vested interests may cause mundane, technical or terminological problems to be much exaggerated.*

We invite you to discuss with us the conceptual underpinning and/or the practical utility of these ideas, and to let us know of related work which we could learn from or support.

Geoff Stanton
Chief Officer
Further Education Unit

A BASIS FOR CREDIT?

Developing a
post-16 credit
accumulation
and transfer
framework

A Paper for Discussion

February 1992

INTRODUCTION

'We would advocate the eventual creation of a unit-based system which would allow individuals to transfer between routes during the 16-19 period as well as after it, would allow units to be combined in such a way as to provide general, specialist, academic and vocational programmes (or combinations of these of equal worth) and would, in general, permit the variety of approaches to learning which we advocated earlier as being required if attainment and participation are to be maximised'.

FEU submission to the House of Commons Select Committee on Education, Science and Arts, March 1991

This paper is aimed at policy makers, planners and managers in institutions and local, regional and national organisations. Because it explores an approach which could be introduced gradually from the bottom up it will also be of interest to practitioners responsible for provision for all post-16 learners. The work described here is part of a long-term FEU agenda to help promote coherence and flexibility in both qualifications and learning programmes post-16. This means examining the possibilities of creating a common system within which all types of qualifications can exist and develop, and a common curriculum framework within which different kinds of learning programme can be designed and implemented.

This paper describes continuing work (RP642) undertaken by FEU as part of an investigation of issues involved in the development of a common CAT system for the post-16 sector. If achieved, such a system would increase the opportunities for learners to undertake programmes which are made up of subjects and vocational disciplines spanning the existing academic, vocational and prevocational qualifications. FEU believes that learning programmes should, in general, embody greater choice, flexibility, relevance and breadth, and learners should receive public accreditation for their achievements. This links with the government's belief that young people should be encouraged to:

'choose a blend of qualifications to suit their individual needs and talents.... After 16 they should have a free choice between A level, AS qualifications, NVQs and combinations of them'.

Education and Training for the 21st Century 1991

RATIONALE FOR A POST-16 CURRICULUM FRAMEWORK

The underlying rationale is:

- to increase the participation and achievement of post-16 learners;
- to improve access to learning opportunities and enhance possibilities for progression in education and training;
- to provide for greater choice and give learners a greater say in what, when and how they learn;
- to encourage learners to undertake broader learning programmes whether they are in employment, preparing for employment, pre-preparing for HE or developing basic skills;
- to facilitate the development of a core of knowledge and skills;
- to develop new study combinations which are more relevant to an innovation culture and which render obsolete divisions and terminology such as academic/vocational, practical/theoretical, creative/technical, Arts/Humanities/Science;
- to allow specialised and customised education and training.

The project arose from a series of reports and consultative papers over the past 18 months proposing a more unified framework for qualifications post-16. They include *16-19 The Way Forward* (Secondary Heads Association); *A British Baccalaureate* (Institute of Public Policy Research); *Beyond GCSE* (The Royal Society); *Credit Transfer and the future of Further Education* (UDACE) and *A Framework for Growth* (Association of Principals of Sixth Form Colleges). Amongst other bodies including the Confederation of British Industry (CBI), the Trades Union Congress (TUC), the Association for Science Education (ASE), National Association of Teachers in Further and Higher Education (NATFHE); the Headmasters' Conference (HMC) and the Committee of Vice Chancellors and Principals (CVCP), there has been a developing consensus about the need for a framework which in general terms:

- is unified and contains both the academic and vocational programmes;
- is based on 'units' expressed in terms of outcomes;
- enables 'credit' to be accumulated and (where appropriate) transferred;
- facilitates the development of a common core of knowledge and skills in all learning programmes, especially in relation to 16-19 year olds.

FEU too, in its evidence to the House of Commons Select Committee (above) and in the response to the Ordinary and Advanced Diploma proposals (October 1991), recommended a way forward based on units as a means of achieving flexibility and simplicity, and recognising positive achievement of different kinds, rigorously, without requiring significant numbers to 'fail'.

The proposals are not ends in themselves and should be seen in the context of developing the most effective ways to increase participation and attainment of all learners post-16. They also aim to enable the development of a curriculum relevant to both individual and wider economic and social interests in the context of an increasingly complex and rapidly changing world.

A BASIS FOR CREDIT - THE APPROACH IN OUTLINE

- Learning programmes and qualifications should be based on clear statements of what someone is expected to know, understand and do ('Outcomes').
- A coherent group of Outcomes is called a 'Unit'.
- The size of the Unit may need to vary, depending on the internal structure and logic of different subjects or vocational sectors.
- It is possible to relate Units one to another in terms of extent of achievement, by giving each a 'credit value'.
- The credit value of a Unit of Outcomes, at a given level, is determined by the time, on average, it will take the learner to achieve the Outcomes in question. If this is 30 hours the credit value is given as one, if 90 hours the credit value is three, etc.
- *The link to the 'hours of learning' is purely for the purpose of allocating credit value; there is nothing to stop fast learners achieving the Unit more quickly while others may need to take longer. It is recognised that Outcomes can be achieved through prior achievement based on learning in the workplace and community.*

A qualification or learning programme *could* consist of a single Unit, if to break it down further would lead to artificiality or incoherence. However this situation is likely to be unusual, and in general a qualification which is made up of a larger number of Units will give flexibility and better feedback to the learner.

In this approach *how* individuals achieve a Unit is not relevant to the framework and will be a matter for institutions, designers of open learning packages, providers of the Accreditation/Assessment of Prior Achievement (APA) and others.

Units will need to relate to each other in *level* of achievement and *type* of achievement. Forthcoming FEU papers will address these issues more fully.

POST-16 CAT FRAMEWORK - AN OPEN SYSTEM

The existing qualifications systems in the UK, GCE AS/A Level, GCSE, National Vocational Qualifications (NVQs), Business and Technician Education Council (BTEC), City and Guilds of London Institute (CGLI), RSA Examinations Board, Council for National Academic Awards (CNAA) CATs, Open University (OU), Scottish Vocational Education Council (SCOTVEC), etc. are closed systems. While there is some potential for credit accumulation, opportunities for credit transfer are limited. They have logical internal relationships within their own system but, despite considerable curriculum overlap, there is no universally agreed way of interfacing with the other systems including degrees in higher education.

A lay person's guide to the UNIX computer system defines an open system as:

'a logical system which provides the means of interfacing with other operating systems'.

A post-16 CAT framework should use the *open system* as a model. An open system is one where users adopt, or subscribe to, a set of standards or rules on a voluntary basis because it offers mutual benefits. It does not involve imposition and is potentially universal.

Examples of this are the electronics industry converging on VHS cassettes; the Unix system for computers; a standard railway gauge and the QWERTY keyboard for the typewriter. None of these systems was imposed - they were adopted by different and competing businesses/operators because they offered benefits to their mutual advantage.

A college could subscribe to the system in two ways; firstly by adopting the framework definitions and system of credit valuation as a way of mapping, comparing and planning its own curriculum offer, and secondly by negotiating agreements with other institutions, HE and employers based on the framework. And so the post-16 CAT framework could emerge from the grass roots into an open national system.

The approach proposed here would result in an open system. It is not a new set of qualifications or awards. It is a way of relating existing qualifications (or parts of them) to each other as well as offering enormous potential for creating new Units, new qualifications, new awards and new progression routes.

A CAT framework based on this approach could, in addition to giving a credit value to qualifications, ascribe credit value to learning programmes not associated with a qualification, provided the programme was described in terms of Outcomes and made up of Units at a specific level.

A fully developed post-16 CAT framework would permit mapping of existing post-16 qualifications and learning programmes onto a common grid both locally and nationally. It might also logically include units from Key Stage 4 of the National Curriculum. It would provide a development platform on which to build new curricula and qualifications and could be used to take UK qualifications and awards away from the current divisions and confusion, and towards greater rationality and coherence.

A BASIS FOR CREDIT FOUNDATIONS OF THE FRAMEWORK

FEU work on the development of a post-16 credit framework as an open system has so far established:

- a definition and specification of Outcomes;
- a definition and specification of Units;
- a methodology for credit valuation of Units;
- an initial proposal about the number of levels which would be required.

Once it becomes possible to determine credit value and level, it will also be possible to ascribe to all qualifications and their component Units, as well as learning programmes, a credit value at a specific level.

For example :

Unit A = 3 Credits Level 4
Unit B = 1 Credit Level 2
Unit C = 2 Credits Level 1

The definitions of Outcomes, Units, Credits and Levels are interdependent and represent the foundations of the framework.

Outcomes

Outcome statements describe what a learner can be expected to know, understand and do in order to achieve credit.

Outcomes may be specified in ways which respect differing curriculum practice, forms of learning and types of assessment.

Examples of statements are:

- elements of competence (NVQs)
- assessment objectives (A level)
- learning objectives (BTEC)
- learning outcome statements (Liverpool Polytechnic)
- statements of attainment (National Curriculum)
- learning outcome statements (National Open College Network)
- statements of attainment (GNVQ)
- statements of attainment (GCSE)

Units

A Unit is a coherent and explicit set of Outcomes, the achievement of which gains the learner a defined number of Credits at a specified level. Units will differ in size and carry different credit values.

The Unit specification consists of:

- title
- level
- credit value
- outcome statements
- assessment criteria
- awarding body

The specification may also include guidance on :

- recommended Unit combinations
- recommended prior study/experience
- outline programme/syllabus
- grading criteria
- teaching and learning strategies
- guidance on APL
- destinations and awards

Credits

Credits are the currency of the system. A Credit is a medium of exchange. It is used to value Units of Outcomes which may vary in size and complexity. Credits are awarded on the successful achievement of a set of clearly-defined Outcomes combined into a Unit *regardless of the actual time involved or the mode of learning.*

A credit value is established by agreeing the notional amount of time (including teacher contact and independent study) required, on average, for a learner to achieve the defined Outcomes of a Unit at a specified level.

This total number of notional hours is divided by a given number, say 30, to establish the credit value for a Unit or programme - one credit is the value given to the Outcomes achieved through 30 notional hours of learning activity.

$$\frac{\text{notional learning time}}{30} = \text{number of Credits}$$

The figure of 30 notional hours is proposed because it approximates to one hour of learning activity (teacher time + independent study) per week per year in the schools, FE and HE sectors. Alternatives are possible - see question 5 in 'Responding to the framework' (p.8).

Once the credit value of a Unit is fixed the mode of learning or the actual amount of time the individual learner spends in achieving the Outcomes is not relevant to the number of Credits awarded.

Credits may not be used to grade different attainment by individual students. All or none of the Credit is awarded for each Unit.

Levels

Credits are achieved at a number of levels ranging from basic education to postgraduate degrees/NCVQ Level 5. Levels might be derived from, and, extend the model of broad equivalence used in the White Paper *Education and Training in the 21st Century*. These are:

		NVQ LEVEL				
		General NVQ	5	Occupationally-specific NVQ		
		Vocationally-related Post Graduate Qualifications	↑	Professional Qualification Middle Management		
Degree		Vocationally-related Degrees-Higher National Diploma	4	Higher Technician Junior Management	Degree	
A/AS Level		Vocationally-related National Diploma, Advance Craft Preparation	3	Technician, Advanced Craft Supervisor	A/AS Level	
GCSE		Broad based Craftsmen Foundaion	2	Basic Craft Certificate	GCSE	
National Curriculum		Pre-Vocational Certificate	1	Semi-skilled	National Curriculum	

Higher Education (HE) already has extensive CAT arrangements. There is a national system in the polytechnic sector and universities are committed to rapid development along similar lines. The National Open College Network has established its own national CAT arrangements at four levels from basic education to degree entry. The development of vocational and pre-vocational courses at Key Stage 4 in the National Curriculum and student progression and curriculum continuity from 14 onwards would be facilitated by a CAT framework

NCVQ have established a framework for vocational qualifications at five levels. The White Paper *Education and Training for the 21st Century* proposes broad equivalences between academic and vocational qualification based on NVQ Levels. The National Open College Federation has also established a framework at four levels which cover a broad range of learning. Recent work by the Unit for the Development of Adult Continuing Education (UDACE) and NCVQ has indicated the potential for convergence in a number of respects. FEU recognises that the definition and number of levels represent a key area of further work which would involve a consensus about broad equivalence, recognition and transferability amongst the major potential users of the framework.

A fully developed framework would allow all post-16 qualifications and learning programmes to be mapped onto a single grid. This would also open up new possi-

ILLUSTRATION OF CREDIT VALUATION

Whatever the size of a Unit, it can be expressed in terms of Credits at a specific levels.

QUALIFICATION OR UNIT	NORMAL HOURS (Illustrative)	CREDIT VALUE	FRAMEWORK LEVEL (Illustrative)
NVQ LEVEL 1			
QUALIFICATION	240	8	1
NVQ LEVEL 2			
UNIT			
Example 1	30	1	2
Example 2	60	2	2
GCSE (at appropriate level)	300	10	2
BTEC NATIONAL			
UNIT	90	3	3
GNVQ LEVEL 3			
1 x A LEVEL	480	16	3
1 x AS LEVEL	240	8	3
ACCESS TO HE CERTIFICATE	600	20	3
HE CERTIFICATE			
HE CERTIFICATE	900	30	4
HE DIPLOMA	1800	60	5
HE DEGREE	2700	90	6
HE MASTERS	900	30	7

NOTE

The notional hours and levels above are used *only for illustrative purposes*. They are an indication of how a fully developed framework could span the full range of post-16 qualifications and curricula, and express credit value in a common form for both qualifications and parts of qualifications.

bilities in terms of choice and combinations. It would be necessary for the framework to possess the breadth to include everything between the most theoretical demands of academic programmes and the most practical demands of NVQs on the horizontal axis and between basic education and HE Masters degrees/professional qualifications on the vertical. The position of National Curriculum levels on the vertical axis also needs to be considered.

FEU recognises the need for extensive consultation and development of a consensus amongst users of the framework at a local and national level before :

- the amount of notional time associated with different qualifications is established;
- the definition and number of levels are fixed.

NEW CURRICULUM AND QUALIFICATIONS

For the purposes of curriculum planning, development of new qualifications and establishing new progression routes between FE and HE and FE and employment, further work is required to categorise Units according to the nature or curriculum area of the Outcomes. It would also involve recommendations on how Units should be combined to maintain coherence and credibility.

There are further questions about establishing a national bank of Units, sharing Units and the appropriate regulatory systems. FEU will be undertaking work in these areas alongside the developments associated with the key components of the post-16 CAT framework.

A BASIS FOR CREDIT? - A SUMMARY

FEU is proposing a framework which is *outcome-led, unitised and credit-based*. It is particularly important to emphasise that :

- achievement of a set of explicit Outcomes specified within a Unit, not the amount of time spent or the mode of study, is the basis for credit;
- Units and learning programmes can be of different sizes, shapes and volume, and therefore they may attract different credit values;
- integrated group awards are not discouraged or ruled out;
- incoherent and arbitrary combinations of Units can be discouraged;
- Credits are awarded at a number of levels. These should range from the National Curriculum/basic education to postgraduate degrees/professional qualifications;
- awards and qualifications could be made up of Units at different levels.

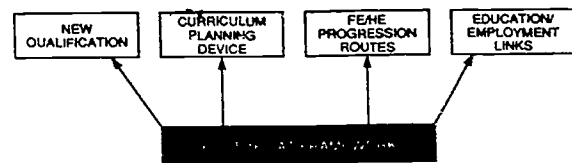
The framework that is envisaged needs to be open and link up academic, general and vocational qualifications. It could be the basis for new qualifications and awards such as GNVQs, reformed AS/A levels and ordinary and advanced diplomas.

In this approach *Credits are educational currency*. They are a medium of exchange for learning which is different in kind, but equal in value. It will allow different curriculum areas to be valued on the same basis and be combined in rational and coherent ways. It can open up development of new curriculum areas appropriate to a changing world.

A crucial aspect of the proposal is that the system of credit used to measure the quantities of learning achieved is divorced from the system of Units (of assessment.) It is because of this that a national framework

can be established which spans the entire post-16 curriculum. It can be subscribed to by national bodies, colleges, HE and employers - it does not need to be imposed.

HOW THE POST-16 CAT FRAMEWORK COULD BE USED



A development platform for post-16 curriculum and qualifications development

A post-16 CAT framework would establish a *platform* for a range of developments in relation to curriculum and qualifications. It would offer :

Learners

- greater opportunity to negotiate and plan learning programmes appropriate to their needs, interests and preferred mode of learning;
- increased choice and opportunities for more varied curriculum combinations;
- opportunities to enter and exit education and training according to needs and circumstances and retain credit earned to date;
- opportunities for changes in direction without loss of credit and with interim certification.

Institutions

- a means to map, review, and plan curriculum offers both internally and in collaboration with other providers;
- a standard definition of credit and a means of determining it in relation to a range of curricula and qualifications for 16-19 year olds and adults;
- a basis for establishing modular delivery structures which would enable institutions to provide flexibility, choice and breadth cost effectively;
- a basis for high quality progression routes into education and training of all kinds.

The broader field

- a common framework for examination and validation bodies supporting the development of both credit accumulation and credit transfer across the divided qualifications system;
- a new basis for the development of GNVQs, Ordinary and Advanced Diplomas and a National Record of Achievement.

FUTURE DEVELOPMENTS

The work of this project has already begun to be used in a number of contexts including a major project in five colleges in Wales managed by the Welsh Joint Education Committee (WJEC) and funded by the Training Enterprise and Education Division of the Employment Department (TEED). London Together, which involves the University of London, several London Polytechnics, London LEAs, TECS and business organisations has shown interest in the approach and drawn attention to its potential for improving co-operation between sectors and raising participation in education and training across the Capital. Islington LEA is investigating the uses of this approach in the development of a unified 16+ curriculum across its institutions. It has attracted considerable interest in the post-16 sector and elsewhere, in advance of any widespread formal dissemination. There has also been interest from the schools sector, HE and Training and Enterprise Councils (TECS).

FEU will be conducting a number of developmental projects in FE colleges but is also interested to learn of examples where institutions/LEAs/TECS/regional bodies are taking up the approach and making use of it for themselves.

FEU will be undertaking work which explores how the approach could be used to develop local/regional curriculum offers with progression to HE and employer consortia. Work is also underway to investigate how the framework could be used as a basis for a national system of ordinary and advanced diplomas as well as other awards giving access to employment, FE and HE. There will also be investigation of how the framework can be integrated with the emerging CATS system in the new HE sector.

Further developments will have to involve:

- determining levels within the framework;
- mechanisms for accreditation and quality assurance;
- determining the scope and extent of any national organisation to regulate and develop the framework;
- methods of categorising units according to types of outcome achieved.

CRITERIA FOR A POST-16 CAT FRAMEWORK

FEU has identified key criteria which a post-16 framework would have to meet. The framework should:

- span all provision and qualifications post-16 (possibly post-14) - academic, vocational and pre-vocational and include higher education;
- create a credit system which unifies existing qualifications without imposing a uniform curriculum;
- develop over a fixed period of time while being based to begin with on existing structures and qualifications;
- encourage flexibility and choice for learners;
- encourage breadth in the design of learning programmes and qualifications;
- develop links between existing awards and qualifications such as AS/A levels, GCSEs, NVQs, GNVQs, BTEC, RSA, C&G, Open College Networks and degrees;
- facilitate both the accumulation and transfer of credit;
- express credit in a such a way that different routes and subject areas are accorded parity in terms of their value within the framework;
- facilitate provision of a common core in terms of skills, knowledge and understanding;
- be simple to operate and understand.

The framework implied here needs to be evaluated against these exacting criteria as would any variants of, or alternatives to it. The purpose of the following questions is to generate discussion and comment and test the extent to which the key criteria are met by these proposals.

RESPONDING TO THE FRAMEWORK

FEU would also like the post-16 CAT framework proposals to be analysed and discussed by national bodies and other organisations. Responses are invited to the suggestions made in this paper and should in particular address the following :

- 1 To what extent is there a need for a national credit framework as outlined here ?
- 2 Are there significant differences about the world of 14-19 education that make a CAT framework more difficult to establish than in higher education or adult education where CAT framework have been developing rapidly? If so what are they?
- 3 Does the approach to credit valuation outlined here offer a realistic basis for establishing a common currency ? If not what alternatives could be suggested?
- 4 Is 'Credit' the best term to use for the unit of exchange ? What term could be suggested as an alternative ?
- 5 Is 30 hours the best amount of notional time on which to base credit valuation ? What alternative figure could be used ?
- 6 Does the framework offer a way of establishing a system of ordinary and advanced level diplomas which could be the basis for entry into HE and employment?
- 7 In what ways could this approach be used by colleges and other institutions in order to support curriculum planning, management and delivery?
- 8 What kind of organisation or network at a national level would be most appropriate in order to develop and regulate a CAT framework for the post-16 sector ?

Please address responses to these questions and other issues arising from this bulletin to Tony Tait, FEU, Spring Gardens, Citadel Place, London SE11 5EH.

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FEU also acknowledges the contributions of CNA, NCVQ, TEED, UDACE, and other national organisations carrying out developmental work related to credit accumulation and credit transfer post 16.

Many practitioners from FE, HE, AE and the schools sectors have also made a significant contributions and in particular the National Open College Networks and Liverpool Polytechnic are acknowledged for their work on modularisation and credits.

FURTHER INFORMATION

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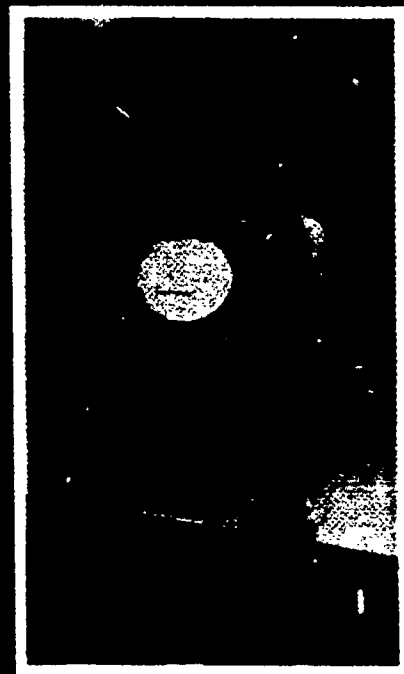
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Vocational Education and Training in Denmark

1 Preface	2
2 Introduction	3
Vocational education	
Adult vocational training	
3 The historic development....	4
Vocational education	
Adult vocational training	
4 Structure and content of the vocational education	6
The different courses	
Organization	
5 Structure and content of the adult vocational training	10
The programmes	
Organization	
6 Finance	12
7 Internationalization	12

1 Preface

Denmark is an industrialized country with a highly developed technological level and production of a varied supply of advanced niche-products. However, only a few decades ago agriculture was predominant, and only thanks to a well-functioning and flexible educational system, the adjustment to an industrialized and service community was possible.

Denmark is one of the smallest European countries with just over 5 million inhabitants. A large number of Danish women are engaged in active employment and the total manpower is equal to 3 million people. The Danes are only favoured by very few raw materials from the subsoil, which means that the country's most important resource is the workforce - a workforce that is well-educated and able to make quick adjustments according to time's demands.

Also, in the future, education policies will continue to play a decisive role in the efforts to promote growth in production and employment, increase the competitive power and improve the balance of payments of the country.

Therefore, in the past few years comprehensive reforms have been implemented to make the system of vocational education and training capable of renewing itself.

Careful attention has been paid to ensure a fruitful interaction between the workers and industries serviced by the system. The labour market partners exercise their influence through statutory representation on advisory and controlling councils and committees - centrally as well as locally.



A well-educated workforce is Denmark's most important raw material.

The individual schools have been given a high degree of autonomy, enabling them to adapt quickly to new needs and technologies. In addition to adult vocational training, activities are expanding heavily these years - reflecting the interest of the Government, as well as the employers' and the employees' interest in adapting to the demands of the future.

2 Introduction

In Denmark, primary and lower education is compulsory for 9 years, with a voluntary 1-year pre-school class and an optional 10th school year. Afterwards, the pupils can choose between various types of training and education.

Vocational Education

About half of the total Danish workforce has had qualifying vocational training and more than half of a youth cohort now enroll in basic vocational education. There is a wide range of specialization in the different main vocational areas.

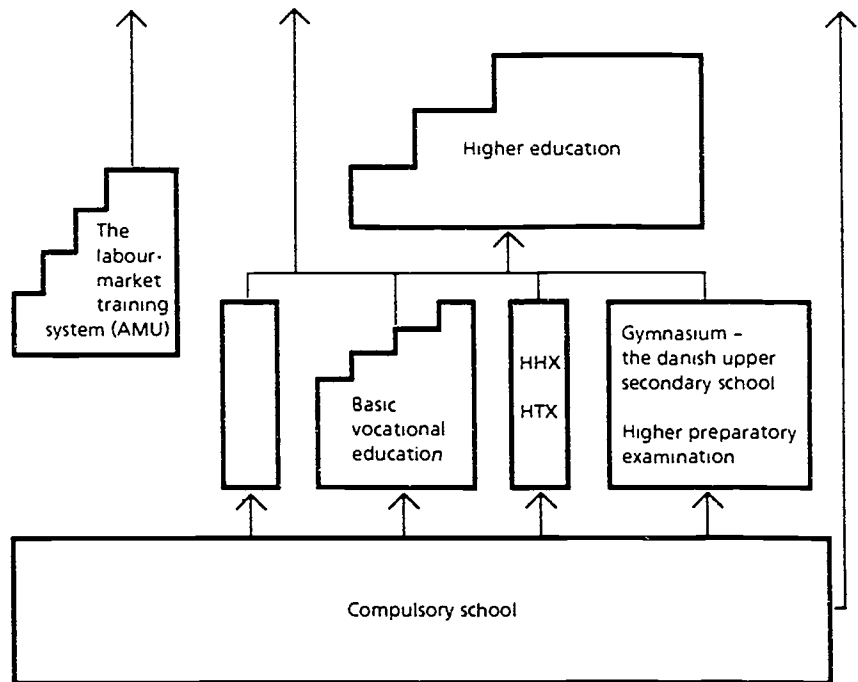
The Danish Parliament lay down the overall framework for these courses, which are organized in close cooperation between the Ministry of Education and the labour market partners.

School and job placement

The cornerstone of the education programmes is the combination of practical training in a company's workshop and theoretical and practical training at a technical or commercial college. On average the courses last between 3 to 4 years with approximately one third of the time spent in a company's workshop. However, also when attending school the trainee will often be found working at one of the workshops.

In addition to the above mentioned basic vocational courses, there are higher commercial examination courses (HHX) and higher technical examination courses (HTX) which are purely school-based courses completed by an examination, which qualifies one for admission to higher education.

After basic vocational education, there is also the possibility of attain-



Vocational Education and Training in Denmark

ing further technical or commercial education.

Adult Vocational Training

The Danish employees have fully recognized the overall importance of continuously up-dating their qualifications and they show great initiative in participating in further education and training.

The adult vocational training programmes are run jointly by the Danish Government and the labour market partners and are administered under the authority of the Ministry of Labour.

The AMU-system

The adult vocational training programmes take place within an independent system, the so-called Arbejdsmarkedets Uddannelser (AMU) - the Labour Market Courses - which have experienced an almost explosive

development during their 25 years of existence. Presently the annual number of participants approximates 5 per cent of the total Danish workforce. In some sectors the annual number approximates 15-20 per cent.

The AMU-system is built over three main programmes - training of semi-skilled workers, further training of skilled workers and work introduction courses.

The core of the education programmes is short independent modules, each resulting in a certificate. Furthermore, the accomplishment of a series of modules, for instance combined with relevant practical work, enables the participant to document his or her improved vocational qualifications that reflect his or her wishes and needs.

3 The Development of Vocational Education and Training

Vocational Education

Modern Denmark is a highly industrialized country, but agriculture was dominant as late as in the 1950's. The fast transformation from agrarian to industrial infrastructure demanded a drastic expansion of the vocational and technological education.

This process was initiated by the Danish Government and strongly supported by the labour market partners, which still play a very active role in the continuous updating of the education and training.

Strong traditions

Danish vocational education and training is built on traditions dating back to the guilds of the Middle Ages, where the crafts guilds formulated very strict rules regarding the training of apprentices.

At the beginning of the 19th century, attempts were made to supplement practical training with theoretical instruction. This initiative arose from local trade or master-artisans' asso-

ciations, but the Unlicensed Trade Act (1857) and the Abolition of Guilds Act (1862) ended the guilds' organization and control of vocational training.

Government and labour market

At the end of the 19th century, when industrialization began in Denmark there was a shortage of qualified labour. To cope with this problem, the parliament intensified vocational education. Since then, legislation in this field has had to keep pace with both social and technological development.

The Apprenticeship Act of 1956 stipulated that the instruction of apprentices at commercial and technical schools had to take place during the day. Consequently, day classes at the schools could take over a large part of the instruction of the apprentices.

Governmental authority gradually increased its control of the vocational education courses through legislation and financing. Also, the labour mar-

ket partners began to play a more important role in vocational training programmes, concurrently with their growing strength and mutual acceptance.

The years of development

While the production of Danish industry increased rapidly during the 1960's the number of apprenticeships declined. To compete with a new attractive upper secondary school programme, the system had to be reformed. Starting in 1972, experiments with work-study programmes, basic vocational training and education (Efg), were conducted at the commercial and the technical schools.

In 1977, the experiment was replaced by the Efg-Education Act, which established a new kind of vocational training and education with strong emphasis on the interaction between theory and workshop-training. With a few adjustments this system is the basis for the present vocational education and training, that underwent a modernization in the beginning of 1991.

Adult Vocational Training

Not only did the vocational training and education of young people have to adjust to the fast transformation of the Danish society during the 1960's, in 1960 a state-programme on vocational training for semi-skilled workers was born. With the establishment in 1965 of a similar programme for the skilled workers, the



During all of the 20th century education and training has played an important part in the development of Danish society.

adult vocational training became an integrated activity within the Danish labour market.

Further training and education was initiated by several federations of trade unions which wanted a system of short courses to ensure that the qualifications of their skilled members could keep up with the fast technological development.

A common task

The labour market partners were entrusted with a decisive influence on the aims and the elaboration of the education programmes. Immediately joint committees were appointed for the training programmes of semi-skilled workers and the further education of skilled workers, respectively. Shortly after, courses started up at the special centres for labour market courses at technical and commercial schools and at technological institutes.

The adult vocational training programmes are gathered in the so-called "AMU-system", which along with the training of semi-skilled and skilled workers is also responsible for work introduction courses for young people and the unemployed.

During its 25 years of existence the adult vocational training system has multiplied its activities by more than forty and today it disposes of approximately 1,800 different education plans, 600 plans for semi-skilled workers, and 1,200 plans of further education for skilled workers. The plans cover a wide and up-dated



spectrum of the labour market's qualification needs.

The so-called "AMU-system" stands for further training and education of semi-skilled and skilled workers.

However, the basis of the system remains unchanged. The labour market partners still have a decisive influence on the educational programmes and they act jointly and in agreement.

4 Structure and Content of the Vocational Education

The Different Courses

Basic vocational education

The country's commercial and technical schools offer 85 basic vocational educational programmes. The teaching at the school varies with periods of job placement. Typically they have a duration of between 3 to 4 years of which the periods of job placement cover 1 to 2 years.

Theory and practice

The ability to make fast adjustments to new techniques and areas of work will be the absolute and decisive qua-

lification in the society of tomorrow. Therefore, the Danish vocational educations build on a holistic way of thinking where a widely organized education course and a high level of knowledge secure the acquired qualifications against obsolescence.

The core of the education programmes is the interplay of theory and practice. Although the theoretical level is high, from the very first day the theoretical learning takes its starting point from practical problems. The practical orientation guarantees that the educational

programmes are immediately applicable in the companies, whereas the theoretical ballast prepares the pupils to profit fully from later continuous further education.

The liberty of choice

The liberty of choice is given high priority within the Danish educational system. During the first time at the school the pupils become acquainted with several vocational training tracks, and not until later do they have to choose which subject to study. Then again, each area is divided into special directions, for instance, the smith training comprises 10 different specialities to choose from.

The principle of liberty of choice applies to access to the study. Two parallel roads lead to the vocational educations after the 9th and 10th class of primary and lower-secondary school.

The pupil can get an apprenticeship contract with a company and start the training with a period of traineeship. Alternatively, the pupil can start with an introduction of 20 weeks at the vocational school. Here the pupil will get around to the school's different workshops. No matter which road of access the pupils choose, they will continue the further course of the training together.



Basic vocational education combines a high level of learning with a thorough introduction to practical work.

Professionalism and knowledge

The periods of teaching at a vocational college are not solely aimed at securing a technical and professional competence within a narrow professional framework. They are also aimed at ensuring - through an element of general education - a uniform level with respect to professionalism and general knowledge. The periods of workshop-training ensures that the education is relevant to the needs of production.

Vocationally oriented upper secondary school

In addition to the above basic vocational training courses, there are the higher technical examination, HTX, and the higher commercial examina-

tion, HHX. Both courses are purely school-based and completed by an examination. Like other upper secondary educations, the instruction provides a general education and it qualifies the pupils to continue at the University or other institutes of higher education.

HTX and HHX are education courses of each 3 years of duration. Both are divided into two blocks. The first year is a vocational training part which the students typically will go through along with the first-year pupils of the basic vocational training. The following two years are theoretically oriented, however, they also comprise solutions of many practical tasks.



Women in Denmark make up a considerable part of the total workforce - far bigger than in other countries.

The HTX training is organized for pupils who are interested in technique. The training comprises among other subjects: technology, natural science and languages. Apart from the theoretical learning, workshop and laboratory practices as known from the industry, form part of the education.

The HHX education teaches the pupils to work within areas directly applicable in business administration and management. Thus accountancy, electronic data treatment and financial decision-making are often represented in the timetable. After they have completed their education, a number of the pupils will continue directly into the industry, whereas others will continue with further and higher education.

Further education

Having completed a vocational education or a college-study, e.g. HTX or HHX, the student can continue with further a technical or a commercial education.

These courses mainly consist of theoretical instruction at a school and the duration of the courses are between one to three years.

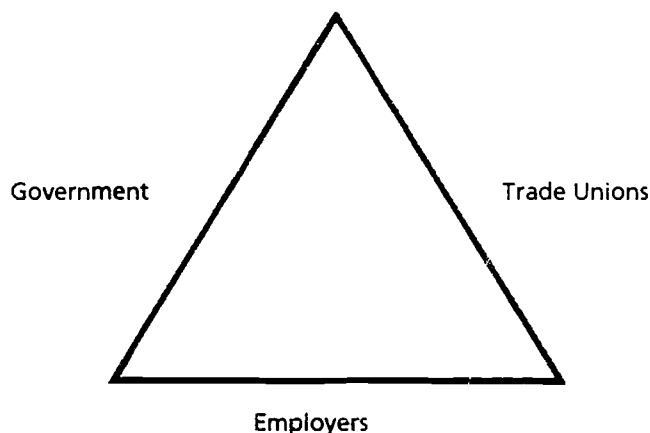
The technical courses are directed towards occupations at middle management level or as advisers within planning and construction (e.g. building technician, machine technician, and laboratory technician).

The commercial courses provide students with qualifications for various administrative and managerial tasks. These include planning and economic control, export, import, business management, among others.

Organization

The Danish system of vocational training and education is an example of a fruitful co-operation between Government and labour and management.

Vocational education is the responsibility of the Danish Ministry of Education. The Department for Voca-



The close co-operation between government and the labour market partners guarantees a dynamic development of education and training in Denmark.

tional Education and Training acts as the executive, carrying out the Minister's orders on all matters related to vocational education and training.

In spite of the fact that education has come increasingly under government control, vocational education remains heavily influenced by the labour market partners. They exert their influence through statutory representation on advisory and controlling councils and committees.

This way of engaging the involved parts from the very beginning improves the development of the education and ensures later acceptance of new initiatives.

Bodies for co-operation

Advisory and controlling bodies cooperate with the Ministry at three levels - council, trade committees and local committees.

The Council for Vocational Education is the most important body. The Council, set up by the Ministry of Education, has twentyfive members. Twenty of these are appointed, in

equal number, by management and labour organizations. The chairman of the council is appointed by the Minister of Education.

The Council advises the Minister and submits recommendations concerning location of educational institutions and approval of new courses. Also, rules concerning students' legal position and course appropriations are matters of the council.

Each of the main vocational fields has its own committee, which submits recommendations to the Department for Vocational Education and Training. Also, the technical and commercial diploma courses have a counterpart to the committees for vocational education.

Trade organizations also form committees. These trade committees submit recommendations to the Department and to the appropriate vocational education committee concerning changes in agreements of practice and necessary teacher qualifications. They decide the structure and content of the actual education.

An important part of the trade committees' work is to approve the companies that want to accept students for their periods of placement.

The vocational college

The Danish vocational college of today is an example of a highly developed, democratic and dynamic system of "checks and balances".

The colleges are self-governing. This means that along with the representation of all relevant local parties on the board of the college, there is a high degree of freedom from local political influence.

Based on the principle of equal participation, the interested parties: county, municipality, employers, employees, students and different groups of staff are all represented on the board with the possibility of influencing the daily management of the college and the educational objectives as seen from a local point of view. The local committee advises on matters regarding the college.

The college and the local industry

A typical Danish vocational college will be able to offer education and training within a number of different main fields of trade. The composition of the areas covered reflects the character of the local economic life.

This in turn, contributes to the fact that the local colleges will be closely linked to the local conditions and as such, act as a responsible partner in the economic development of the local community.

All in all, it can be said that the structure of the Danish vocational educational system facilitates a close contact between the different interested parties, especially with regard to maintaining the vital "lifeline" be-

tween the college and the local industry.

Continuous development

New technology and new production methods are primarily transferred by way of continuous public grants to the running of the school. The grants are given according to the school's number of pupils.

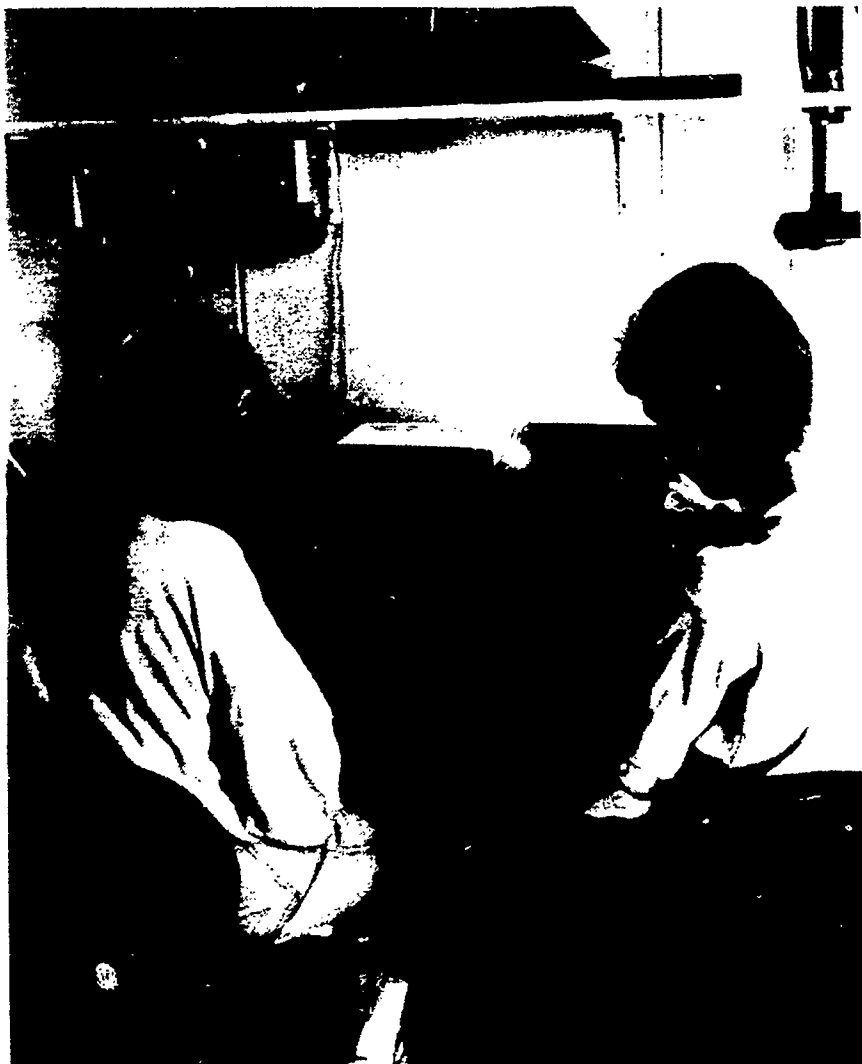
However, not all available funds for purchase of new equipment is financed by the government. Local private enterprises often find it in their interest to sponsor the acquisition of new equipment.

Also, the pedagogical ideas are continuously improving and have, during the last decades, turned towards ways of organization which are especially geared towards young people getting a vocational education.

Tailor-made courses

In competition with private suppliers the vocational colleges offer tailor-made training courses for the local enterprises.

This type of activity takes place on normal commercial conditions, although there are to some extent a possibility of getting public grants for this type of training.



Educational institutions continuously adjust themselves to the technological development in the companies.

5 Structure and Content of the Adult Vocational Training

Adult vocational training provides basic qualifications to the semi-skilled workers and updates, as well as, develops a wide series of vocational basic educations according to the changing demands from the industry.

The ability of the workforce to adjust itself to time's demands has made the system of further education popular with companies. During the structural changes of the years to come the companies will need the flexibility of their employees.

The internationalization will manifest itself in amalgamations and large-scale operations, at the same time that the technological development will accelerate. Large sectors such as the construction industry and the public sector will decrease considerably, whereas the export and service sectors will come through this decade with renewed strength.

At the same time, less young people will seek employment within production companies. This means that the present workforce will have to meet the future's demands on qualifications, to an even higher degree than now.

The system of further education - already a considerable educational success - is therefore expected to extend its activities in the years to come.

The Programmes

The adult vocational training run by the so-called AMU-system includes programmes for semi-skilled workers and skilled workers as well as work introduction training.

The two programmes mentioned first, alone comprise a total of 1,800 educational plans covering a very wide spectrum of qualification needs

ranging from traditional craftsmanship to highly technological skills in connection with the newest computer based techniques of production. With the breaking up of traditional ways of production, wider courses on subjects like, for instance, cooperation and quality-consciousness are also becoming very popular with companies and employees.

The individual education plans create the basis for courses of typically 3 weeks of duration. Each course can be part of a coherent modular system. However, the individual courses are completed with a certificate of participation and the courses are qualifying in themselves. The modular structure guarantees that the participant, according to his or her needs, may walk in and out of the system. Upon a coherent series of modules, the participant obtains certificates, that prove his or her extended qualifications and reflect his or her wishes and needs. Supplementary to the courses established within the system, companies have the possibility of ordering tailor-made courses for their employees.

Training of semi-skilled workers

The training for semi-skilled workers comprises about 600 different courses within 25 occupational fields.

The training is offered in the form of a coherent modular system with short-term, specifically oriented courses tailored to specific job functions.

The modular system comprises different levels, making it possible for all participants to find a level which matches their individual skill, background and work history.

At the lowest level - the so-called basic courses - there are no skill

requirements at all, and at the other end of the scale there are courses in specific fields with very complicated job functions.

Further training of skilled workers

The purpose of further training courses is to maintain, develop and improve the vocational skills of skilled workers, supervisors and technicians so that they will be in line with the technological development and the needs of the labour market, at any time.

Further training comprises about 1,200 different courses within 28 vocational fields.

Further training courses are organized as a modular system in the same way as the training courses for semi-skilled workers.

Parallel to the training for semi-skilled and skilled workers, courses for groups like supervisors and technicians have been developed recently.

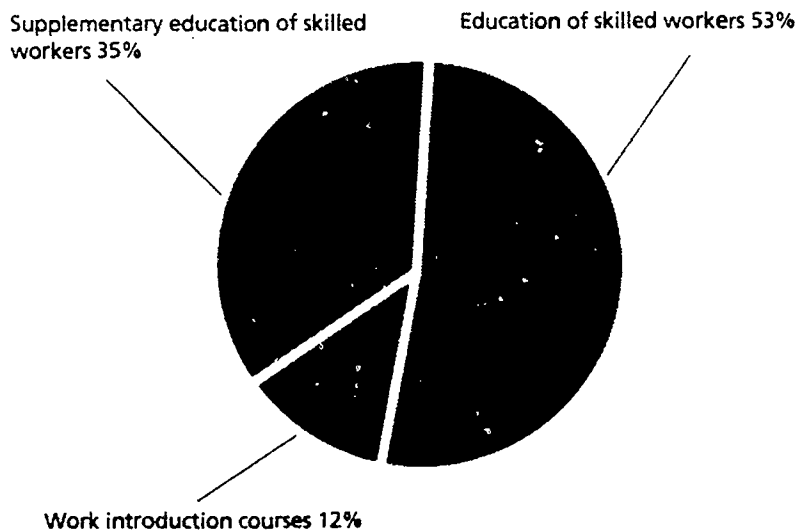
The programmes are planned and decided by the labour market partners.

Work introduction

The work introduction courses offered include courses especially designed for young persons, unemployed women and long-term unemployed. In addition, special courses have been designed for migrant workers. These special courses emphasize the teaching of the Danish language.

The training takes place at the work introduction centres in the training schools for semi-skilled workers.

Normally these courses have a duration of between 7 to 10 weeks, but typically the Danish courses for mi-



The grouping of the 180,000 participants in AMU-courses per year in percentages.

grant workers last from 12 to 18 weeks.

A new training course has been developed for the unemployed, the so-called inspiration course. The course, which has a duration of 1 to 2 weeks, is offered to the unemployed after 3 months of unemployment if they are considered in danger of becoming longterm unemployed.

The training offer is of 3 to 6 months duration and aims at improving the unemployed persons' chances of obtaining employment by means of training activities offered in a wide range of fields.

Organization

The adult vocational training activities fall under the authority of the Ministry of Labour and are administered by the National Labour Market Authority.

The training council for adult vocational training advises the Minister of

Labour on matters which are common for various types of adult vocational training. One of the main responsibilities of the training council is to submit, at least once a year, a recommendation to the Minister of Labour on expected total needs for training and appropriations in the field of adult vocational training.

The responsibility for the objectives and the elaboration of the educations lies with permanent and joint committees that represent the labour market partners. To ensure the coordination of content, structure and consumption of resources, the education plans are presented to superior committees on education, also joint committees formed by the labour market partners. Each programme has a committee on education and these committees constitute the approving authority in relation to the structure and content of the teaching plans. Consequently, the financing of the educations is conditioned by the approval of the committees.

Schools for semi-skilled workers

The training of semi-skilled workers is held at 24 training schools spread all over the country. Five schools are state schools, the rest are independent training schools run by Committees of Representatives formed by local employers' and workers' organisations, municipal and county authorities, the public employment service, the labour market boards etc.

The operation of both the independent training schools and the state-owned training schools is financed 100 per cent by the state.

Training of skilled workers

Further training courses for skilled workers are held at the technical and commercial schools run by the Ministry of Education. The training may also take place at technological institutes, at the training schools for semi-skilled workers and in the training departments of larger companies.

The training courses are organised by the industrial training committees which have members representing both sides of industry.

The state finances the operational costs of running the vocational education and training for young and adults.

The total budget of the 120 vocational schools is approx. DKK 6 billion.

The total number of employees is approx. 20,000. Teachers account for approx. 14,000 of this total.

The total number of full-time day students in the vocational education system is approx. 65,000. In addition, an amount of 100,000 part-time students equivalent to 16,000 full-time students participate in short evening and day courses provided by the system.

A total of 180,000 participated in the adult vocational training courses in 1990, on average in courses of two weeks' duration. The Government expenditures of these activities amounted to a little more than 2 billion DKK. The funds are obtained in the form of statutory contributions paid by employees and employers to the Vocational Training Fund.

Pupils in the vocational education system receive a pupil's wages during their period of placement in a company. When at school, they receive grants from the Danish state.

Semi-skilled or skilled workers are entitled to compensation for loss of income at a rate corresponding to the maximum rate of daily cash benefit (2502 DKK per week) during their vocational education. At the work introduction courses, the participants receive an allowance of DKK 663 per week, if they are not entitled to unemployment or welfare benefits.

Increased internationalization and specifically the EC open market is a huge challenge for a little country like Denmark. It is a challenge that requires the highest possible educational level within the Danish workforce. Therefore the international competition is an incentive to continuously "go over the teaching at the technical and commercial colleges as well as at the AMU-centres with a fine tooth comb".

The internationalization does not come as any surprise to the Danish educational system, that is well-represented in various EC committees and programmes.

market partners, the Danish model has become an export good.

Danish technical and commercial colleges and the AMU-centres participate in various international projects on education and they often co-operate in analysis to examine training requirements, project management and planning of training and education carried out by local teachers. This export of education know how is expected to increase considerably during the years to come.

Denmark's competitive power is based primarily on an effective educational system. Consequently,



Denmark plays an active part in the international co-operation within the field of education.

Simultaneously, the growing international openness has also stimulated foreign countries' interest in the Danish model for "Vocational Education and Training". Based on efficient and, seen from abroad, on quite exceptional elements of co-operation from pupils' level to co-operation between the state and the labour

Denmark is an active participant in especially the European co-operation within the field of education. This cooperation is based on mutual understanding and acceptance of national differences and characteristics. As the Danish Minister of Education, Bertel Haarder, has put it: "Not harmonize but recognize".

Vocational Education & Training in Denmark

Characteristics of a Danish Vocational College

The Danish vocational college of today is an example of a highly developed democratic and dynamic system of "checks and balances".

Self-governing institutions

The colleges are self-governing which means that they, on the one hand, have a high degree of freedom from local political influence and, on the other hand, that all local parties relevant to the programmes/courses are represented in the board of the self-governing institution.

Principle of Equal Participation

Based on a principle of equal participation, the interested parties: county, municipality, employer, employee, students and different groups of staff are all represented on the board with a possibility of influencing the daily management of the college and the educational objectives as seen from a local point of view.

Influence from the Central Authorities

The central authorities, in this case primarily The Ministry of Education & Research through the Department of Vocational Education and Training defines the overall educational policy with respect to the economic and professional/pedagogical framework.

The professional/pedagogical content

of the various vocational programmes are defined and coordinated nationally by the Minister's counselling body: The Council for Vocational Education together with the National Trade Committees.

The national trade committees are all based on local committees who have the responsibility to ensure that the local conditions and requirements are met.

All the advisory committees are formed on the basis of the above mentioned principles of equal participation.

All in all it can be said that the structuring of the Danish Vocational Education System facilitates a close contact between the different interested parties, especially it maintains the vital "lifeline" between the college and the local industry.

Alternating Education The Sandwich Model

The system of vocational education and training is based on the principle of alternating education meaning a shift between periods of teaching at school and periods of teaching at workshops.

The overall purpose of this system is to ensure a high level of professional expertise together with a correspondingly high level of adaptation to the demands and requirements of the production.

The periods of teaching at a vocational college are not only aimed at

securing a technical and professional competence within a narrow professional framework but also to ensure - through an element of basic education - a uniform level with respect to professionalism and general knowledge.

The periods of workshop-training ensures that the education is relevant to the needs of the production. A professional basic education which is an interaction between periods of school-teaching and company-based workshop-teaching ensures that the apprentice by the time he/she finishes his/her education is ready for real life "production".

The Pedagogics of Vocational Education and Training

During the last decades there has been an increasing tendency in the vocational colleges to develop pedagogical ideas and ways of organization which are especially geared towards young people taking a vocational education.

The colleges being responsible for this kind of youth education must ensure that the apprentice, besides being professionally qualified, also has the opportunity of qualifying himself in general.

This means that the educational orientation of each student in general has four dimensions: an individual, a social, a professional and a sparetime dimension.

The pedagogical principles developed at the vocational colleges therefore must incorporate these four dimensions into a comprehensive teaching method, emphasizing each dimension differently during the course of study.

The Vocational Colleges cover a wide range of Professional Fields

A typical Danish vocational college will be able to offer education and training within a number of different main fields of trade.

The composition of these main fields of trade and their individual training programmes will reflect the character of the local economic life.

This, in turn, is contributory to the fact that the local colleges will be closely linked to the local conditions and as such act as a responsible partner in the economic development of the local community.

Transfer of Technology

It is relatively easy for the vocational colleges to have new technology and new production-methods transferred from the economic life to the colleges and their training programmes.

New technology and new production-methods are primarily transferred by way of centrally allocated funds for purchase of equipment together with funds for the teacher's further education. In addition to this there is among the teachers a strong tradition for using their own sparetime to upgrade themselves.

Sponsoring by Private Enterprises

However, not all available funds for purchase of new equipment come from centrally government allocated funds. Locally private enterprises often find it in their interest to sponsor the acquisition of new equipment in order to contribute to the raising of their appren-

tices' educational level, be it within the company itself or in the trade as a whole.

The State Institute for the Educational Training of Vocational Teachers - SEL

The SEL still plays a keyrole in providing courses for the upgrading of vocational teachers. However, the dominant role the institute used to play is now being challenged by private companies, trade organizations and technological institutes.

As the colleges themselves conduct in-service training and participate in development projects at many different levels, the acquired technological and professional knowledge will quickly be passed on to a wide range of different course-participants and companies to the benefit of the local industry.

Specialized Business and Technical Studies - Merkonom/ Teknom

In Denmark we have a long popular tradition for lifelong education.

Within the vocational education system this has resulted in the creation of a type of education (merkonom/teknonom) which is characterised by consisting of a number of common modules supplemented by different special modules and by taking place after

normal working hours.

This type of education for instance gives a technically educated employee the possibility of supplementing his technical qualifications with qualifications in economics, planning, management, marketing etc. - all according to the employee's own present and future need for new qualifications.

As a result the individual company will get broadly qualified employees - especially at middle-management level - who are flexible and being so will consequently have the opportunity and ability to participate at different levels and in different areas of production in the company.

Tailor-made Training Courses

The vocational colleges are - in competition with private suppliers - offering tailor-made training courses for the local enterprises.

Most colleges are able to cover a wide range of different professional areas and subjects all of which can be designed to meet the individual needs of different companies in different trades.

This type of activity is taking place on normal commercial conditions although there are to some extent some possibilities of getting public grants for this type of training.

THE MERKONOM MODULAR
STUDY PROGRAMME

Flexible Low-cost Education for Middle Managers

Ministry of Education

Denmark

1990

108

The Danish Merkonom Courses (Diploma Courses
in Specialized Business Studies

Introduction

In Denmark, the merkonom programme is a modular study programme, which is mainly aimed at middle-management staff, etc. with a certain educational background who wish to receive the theoretical background for the practical cooperation situations which they experience in their day-to-day work both professionally and with regard to personnel management.

The merkonom programme, which has existed in Denmark for more than 25 years, has been an immense success, and there is a yearly number of more than 80,000 applicants for the individual specialization modules.

This corresponds to a yearly number of approx. 25-35,000 applicants for the course as such.

The merkonom programme has contributed greatly to the heightening of middle-management's knowledge of modern management techniques and the decision making process in firms.

The programme is flexible, cheap to run and available all over the country. It is furthermore characterized by a minimum of effort with regard to preparatory planning.

The module and content related structure of the programme makes it interesting seen in the light of certain countries' wishes and needs for development in industry.

Merkonom courses

The aim of the merkonom courses is to provide the participants with a relevant basis for taking on concrete qualified functions in their line of business.

The courses are primarily intended for persons who feel a need for pursuing a short-term commercial/administrative education next to their job. In order to gain the best possible profit from the course, participants must be in possession of a certain maturity and practical experience from employment in the private or public sectors.

Most participants are between 25 and 35 years of age.

Structure of the programme

Courses are arranged in modules which enable the participants to acquire knowledge and skills within individual subject areas as well as a full merkonom education. The modules are typically planned with two hours' teaching a couple of evenings a week. They are part-time courses in order to enable the participants to carry on their job while attending the course.

The courses are divided into introductory subjects, main subjects (core subjects and specializations) as well as supplementary subject.

Introductory subjects

The introductory subject is:

Introduction to business economics which primarily aims at providing the participants with knowledge of some fundamental principles in

accounting and law with a view to creating the necessary foundation for the subject: business economics.

Core subjects and specializations

The three core subjects: management and cooperation, business organisation and business economics can be combined with different specializations enabling participants to obtain a full merkonom education over a period of several years, for which they will receive a full diploma. A survey of how the subjects are placed in the courses is given in the tables below where there is also a survey of the various main subject courses which may lead to a merkonom education within the following specializations: Retail trade management, data processing, production management, export, finance, purchasing, marketing, business organisation, personnel administration, accounting, auditing, transport and - as an experiment - international marketing with English and French.

The order indicated above is only meant as a guideline, but in order to ensure the profit to be gained from the teaching, there are special admission requirements to be met for the different subjects.

Participants may be exempted from following the teaching in one or several subjects, if they have already completed a training course within the subject area.

No time limit has been fixed for the completion of the course, but it may be difficult to follow the teaching, if there are more than a couple of years between the completion of the individual subjects forming part of the merkonom course.

The subjects for which there are no special admission requirements can be taken on a single subject basis. This means that it is possible for the participants to follow the course in individual subjects according to their special interest and needs without having to take the full merkonom programme. A diploma is issued on completion of each individual subject.

Supplementary subjects

The supplementary subjects comprise a number of courses which provide the participants with a possibility of improving and developing their knowledge in a number of topic areas which form part of the main subjects. The teaching is to a very great extent based on participant activity both in the teaching and with regard to preparation.

Teaching form

The teaching form varies - depending on the nature of the subject - between lectures, discussions, group work, study circles and lectures by participants which provide a possibility for drawing parallels to day-to-day problems in different branches of industry.

There are 4-6 hours homework for every two hours teaching per week.

The teaching is planned in such a way that each subject lasts a total of 60 hours.

Teaching staff

The teaching of most subjects is taken care of by teaching staff who in addition to a higher theoretical education has acquired practical experience within the subject area they teach.

Updating of the subjects

In order to ensure a current updating of the subjects in step with the development in in-

dustry and the development within the pedagogical area, an education committee is set up which i.a. consists of leading business people with special links to the different business areas and school representatives.

**Admission
requirements**

The admission requirements are very liberal as the teaching form takes its point of departure in a common basis of experience and a certain theoretical knowledge with the participants.

Applicants who have at least 2 years' work experience from the private or public sectors or who have or have had their own business are eligible for admission.

The Danish Merkonom Courses

RETAIL TRADE MANAGEMENT

Organizational Psychology	Shop Management	3rd year
Business Organization	Personnel Administration	2nd year
Business Economics	Marketing I	1st year

DATA PROCESSING

Organizational Psychology	Data Processing III	3rd year
Business Organization	Data Processing II	2nd year
Business Economics	Data Processing I	1st year

PRODUCTION MANAGEMENT

Purchasing I	Labour Regulations I
Organizational Psychology	Organizational Strategies
Business Economics	Business Organization

EXPORT

Organizational Psychology	Legal Aspects of Foreign Trade	3rd year
Business Organization	Sales Aspects of Foreign Trade	2nd year
Business Economics	International Trade and Economics	1st year

FINANCE

Organizational Psychology	Business Organization	3rd year
Finance		2nd year
Business Economics	Economics	1st year

PURCHASING

Organizational Psychology	Purchasing III
Purchasing I	Purchasing II
Business Economics	Business Organization

INTERNATIONAL MARKETING

Commercial English III	Marketing Planning and Sales Techniques	3rd year
Commercial English II	Market-Analysis	2nd year
Commercial English I	Area Studies	1st year

MARKETING

Organizational Psychology	Business Organization	3rd year
Marketing II	Marketing III	2nd year
Business Economics	Marketing I	1st year

BUSINESS ORGANIZATION

Organizational Psychology	Data Processing I
Organizational Psychology	Personnel Administration
Business Economics	Business Organization

PERSONNEL ADMINISTRATION

Labour Regulations I	Personnel Development	3rd year
Business Organization	Personnel Administration	2nd year
Business Economics	Organizational Psychology	1st year

ACCOUNTING

Organizational Psychology	Data Processing I	3rd year
Accounting		2nd year
Business Economics	Business Organization	1st year

TRANSPORT

Organizational Psychology	Transport II
Business Organization	Legal Aspects of Transport
Business Economics	Transport I

AUDITING

Auditing Techniques	Taxation and Commercial Law	3rd year
Accounting		Taxation I
Business Economics	Business Organization	1st year

THE TECHNOLOGY MODULAR
STUDY PROGRAMME

Research for the Education of Public Schools

MINISTRY OF EDUCATION
DENMARK

1991

The Danish Teknom Courses (Diploma Courses in Specialized Technical Studies)

Introduction

The teknom programme is - like the corresponding merkonom programme - a modular study programme, which is mainly aimed at middle-management staff, etc. with a certain educational background who wish to receive the theoretical background for the practical cooperation situations which they experience in their day-to-day work both professionally and with regard to personnel management.

The teknom programme, which has existed in Denmark for more than 10 years, has been an immense success, and there is a yearly number of more than 10,000 applicants for the individual specialization modules.

This corresponds to a yearly number of approx. 3-4,000 applicants for the course as such.

The teknom programme has contributed greatly to the heightening of middle-management's knowledge of modern management techniques and the decision making process in firms.

The programme is flexible, cheap to run and available all over the country. It is furthermore characterized by a minimum of effort with regard to preparatory planning.

The module and content related structure of the programme makes it interesting seen in the light of certain countries' wishes and needs for development in industry.

Specialized
technical
studies

The aim of the teknom courses is to provide the participants with a relevant basis for taking on concrete qualified functions in their line of business.

The courses are primarily intended for persons who feel a need for pursuing a short-term commercial/technical education next to their job. In order to gain the best possible profit from the course, participants must be in possession of a certain maturity and practical experience from employment in the private or public sectors.

Most participants are between 25 and 35 years of age.

Structure of
the programme

Courses are arranged in modules which enable the participants to acquire knowledge and skills within individual subject areas as well as a full teknom education. The modules are typically planned with two hours' teaching a couple of evenings a week. They are part-time courses in order to enable the participants to carry on their job while attending the course.

There are about 20 subjects, which may be followed either on a single-subject basis or grouped into a "line". Six related subjects constitute a line.

Line studies are provided in the following subjects: Processing Management, Quality Management, Industrial Management, Production Management and Information Technology in production (Computer Aided Manufacturing and Computer Aided Design) to mention some of them.

The subjects are divided into two groups: General management covering the subjects Business Economics, Business Administration and Industrial Psychology, and technical subjects such as Quality Management, Marketing of Services, Method Management, Commercial Law, Industrial EDP, Processing Management, Industrial Management, Computer Aided Design and Computer Aided Manufacturing.

Business Economics

The aim is to give the participants an introduction to a number of important areas within the financial management of a company enabling them to discuss and understand managerial and financial decision-making.

Business Organisation

The aim is to give the participants a basic knowledge of the organisational structure of a company, its management and the need to adapt to a changing environment.

Industrial Psychology I

The course aims at giving the participants a general insight into the formation and development of the personality and at conveying to them an increased knowledge and understanding of human relationships. Furthermore, the teaching should give the participants an increased knowledge and understanding of how the interaction

between employee and job with special reference to everyday work situations. Thus the course should enable participants to exert an influence on the cooperation in the company.

Supplementary
courses

For participants who want to set up their own business a supplementary course (approx. 30 hours), giving an introduction to business economy, may be offered.

Individual
education

No time limit has been fixed for the completion of the course, but it may be difficult to follow the teaching, if there are more than a few years between the completion of the individual subjects forming part of the teknonom course.

The subjects for which there are no special admission requirements, can be taken on a single-subject basis. This allows the participants to follow individual subjects according to their special interest and needs without having to take the full teknonom programme.

A diploma is issued on completion of each individual subject.

Teaching form

The teaching form varies - depending on the nature of the subject - between lectures, discussions, group work, study circles and lectures by participants which provide a possibility for drawing parallels to day-to-day problems in different branches of industry.

There are 4-6 hours homework for every two hours teaching per week.

The teaching is planned in such a way that each subject lasts a total of 60 hours.

Teaching staff

The teaching of most subjects is taken care of by teaching staff who in addition to a higher theoretical education has acquired practical experience within the subject area they teach.

Updating of the subjects

In order to ensure a current updating of the subjects in step with the development in industry and the development within the pedagogical area, an education committee is set up which i.a. consists of leading business people with special links to the different business areas and school representatives.

Admission

The admission requirements are very liberal as the teaching form takes its point of departure in a common basis of experience and a certain theoretical knowledge with the participants.

Applicants who have at least 2 years' work experience from the private or public sectors or who have or have had their own business are eligible for admission.

A Short note on vocational training in Denmark.

The whole system of vocational training has been changed recently. Adult vocational education in this ministry is all under the heading of the Act of Open Education (Åben uddannelse, ÅU) as from jan. 1990, and vocational education and training for young people has been reformed as from jan. 1991.

The main principles are that the Ministry, together with Parliament, decide on the economical framework (each year with the Bill of Finance) and, in collaboration with the appropriate advisory bodies (i.e. the social partners) decide on the aims of instruction. The detailed planning of the teaching is left to the schools and their governing boards.

The basis of all vocational training in Denmark is a sandwich system; for young people school and apprenticeship (the dual system), and for adults the interaction between work and short courses (a week)/ evening classes.

The Ministry of Labour has the main responsibility for Continuing Vocational Training in Industry (production) via the Arbejdsmarkedstyrelsen (AMS). CTV for unskilled workers takes place at the AMU-schools under the AMS (the so-called AMS-courses).

CTV for skilled workers takes place at technical schools/colleges, normally in periods when the apprentices are working in industry. These schools are under the auspices of the Ministry of Education, but the CTV activity is paid for by the AMS directly to the schools.

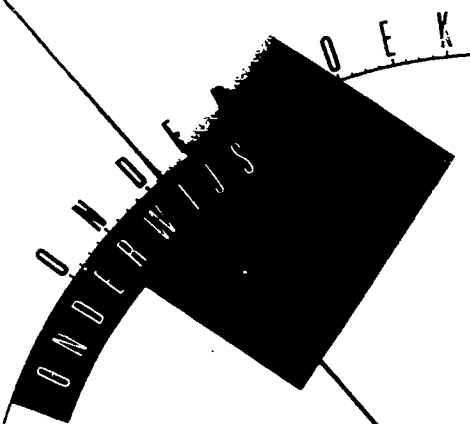
Finally the Commercial schools/colleges and the Technical schools/colleges run single subject courses or modular study-programmes such as the Merkonom- or the Teknonom-programmes for adults under the Act of Open Education. These courses can be combined to give the same national competence as the corresponding full time courses.

STICHTING CENTRUM VOOR ONDERWIJSONDERZOEK

PETRA research programme (1991-1993)

Theme 8: The effectiveness of new curriculum models for initial vocational training: modularisation

Draft country report 'The Netherlands'



April 1992

Elly de Bruijn

Centre for Educational Research
of the University of Amsterdam

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summary

Chapter 1: Context and focus

In the Netherlands, full-time education is compulsory for the first ten years (six years of primary education and four years of secondary education). As for the eleventh year (roughly age 16 or 17) part-time education is compulsory for two days a week.

Dutch secondary education is exceedingly hierarchical in structure. At the end of primary schooling, pupils are allocated to junior secondary vocational education (LBO, duration four years), junior general secondary education (MAVO, duration four years), senior general secondary education (HAVO, duration five years) and pre-university education (VWO, duration six years). Selection and allocation are based chiefly on pupils' proven learning abilities in the abstract/theoretical subjects. The curriculum in the first year (sometimes two years), known as the transition class, differs as between AVO/VWO and LBO. The current policy followed by the government is to introduce a common curriculum within the first three years of secondary education.

The admission to vocational education and training occurs after ten years of full-time education. LBO should be regarded as a preparatory branch of vocational education at junior stage which is a combination of general and pre-vocational education. The implications of introducing comprehensive education for LBO are not clear yet.

Vocational education at senior level falls chiefly within three different categories of provision: Senior secondary vocational full-time education (MBO, consisting of long and short courses; the short courses were formerly called KMBO); Day-release courses (BBO)/apprenticeship system; higher full-time vocational education (HBO).

The Dutch education system is divided into public and private education. Public schools are set up and maintained by the State or by municipal authorities, private schools by artificial persons in private law such as foundations and associations. Virtually all public schools (especially those providing vocational education) are run by the municipal authorities. Private schools can be divided into denominational and non-denominational. Of the Dutch educational system as a whole, some 2/3 currently falls into the category of private education. The distinction between public and private education is embedded in the Constitution and elaborated in various educational statutes. The consequence of this so called 'freedom of education' (for private schools) which is embedded in the Constitution and the high proportion of private schools is the lack of a national curriculum. Government (eg. the Ministry of Education and

Science) just monitors the quality of teaching and controls the 'outcomes'.

This study focuses on modularisation within senior secondary vocational education which students enter at the age of fifteen or sixteen (after completing ten years of full-time education): MBO (short and long courses) and BBO/apprenticeship system.

Chapter 2: Characteristics and objectives of modularisation

2.1 The scope of reform

In the Netherlands, the date of introducing modularisation and the degree of implementation varies across the different types and branches of vocational education and training.

In August 1991, the KMBO-courses (the short MBO-courses) were (formally) integrated with the long full-time courses into institutions for vocational education and training (the first step towards 'regional education and training colleges'). These short courses started in 1979 as pilot projects. They were considered necessary because the admission requirements for long full-time courses and courses provided within the apprenticeship system were too severe. The programmes of all these (eighteen) vocational courses provided within the pilot projects were designed in a manner that would now be called 'modularised'. The curriculum was divided into programme units (modules) related to relevant and realistic units of occupational practice. The pilot projects had been experimenting with this type of vocational courses (and modularisation) for eight years until 1987.

As for the apprenticeship system, the situation is much more complex. In 1992, there are 31 so called branch-specific national bodies (run by social partners and representatives of the educational world). These bodies are responsible for and provide apprenticeship courses within a specific branch. Some of them provide a large number of courses, others provide rather few, depending on the share of the specific branch in the national economy. The off-the-job part of the apprenticeship training is provided by regional BBO-colleges which are not branch-specific. The extent and route of introducing modules has varied across the branches. Most of the national bodies started modularising their training system around 1985. In most of the cases, they started by introducing pilot projects. Approximately half of the national bodies (including the largest ones) can presently provide a revised branch-specific system of modular training courses within their apprenticeship system.

Within senior secondary full-time vocational education (the long MBO-

courses), only some courses have been modularised; there are only scattered experiments on modularisation.

2.2 Reasons and objectives of modularisation

Modularisation has its roots in a number of developments; there are both school based, curriculum-oriented reasons and industry-oriented reasons for modularisation. Important reasons for modularisation within vocational education and training can be located around 1980, when an economic recession started to develop. The problems concerning vocational education and training were formulated as follows: inadequate transition from school to work; high level of youth unemployment; shortage of well qualified professionals; a diversified, fragmented, not client-oriented and rather obsolete vocational education and training system.

The reason why the curriculum of the short full-time courses (KMBO) has been modularised has to do with its origin. The short full-time courses have been developed to fill in a gap existing in the (vocational) education system, especially with regard to dropouts (or disadvantaged) in the 16 to 18 age group. The aim of this short courses (two years) was to offer students who, for some reason, did not fit in the more formal educational system, a basis of professional competence. The objectives of structuring the contents into clear and 'realistic' units were, on the one hand, to make individual routes possible and, on the other hand, to offer a meaningful programme.

With respect to BBO/apprenticeship system, in the early 'eighties it was stated that the courses within the apprenticeship system had become somewhat obsolete (did not meet the changed requirements for professional competence) and inefficient (too many youngsters dropped out). According to leading employers, industrialists and the government, the links between education and industry were severely disturbed. Flexibility is an important aim as far as the modularised apprenticeship based courses are concerned. Additionally, objectives as mentioned in the case of KMBO apply here too.

Modularisation as such is no major policy of the government. Its two main concerns are: re-structuring the vocational training system in a coherent and flexible system for vocational education and training for youngsters and adults, employed and unemployed; secondly making courses more related and responsive to (changes within) occupational practice. Modularisation is regarded as just one of the means to reach these goals. The current policy, however, focuses mainly on the creation of different forms of dual learning courses: MBO-colleges (in the future 'regional education and training centres') and enterprises will be stimu-

lated to create courses which consist of combinations of on-the-job and off-the job learning. Those 'dual' courses are considered to be an important instrument to create a flexible vocational training system which should respond to the specific needs of students/clients and the (ever) changing needs of industry. Also, the transformation of the full-time courses into 'dual' courses is considered as very important with regard to the integration between BBO and K/MBO and other part-time courses.

2.3 Concept and characteristics

Modularisation, such as implemented in the Netherlands, primarily focuses on re-arranging the contents of courses. It has historical roots going back to the time when people were fighting for equal opportunities in education. One of the activities within this movement was that of reforming the curriculum by 'thematically' re-arranging the content of teaching. By 'thematic' is understood that the content (of courses) should not be divided into artificial units that do not exist as such in reality (as is the case with the traditional subjects) because it is not the way children/students/people go through reality. Rather than into artificial units, the content of teaching should be divided into meaningful units which should have a clear relation with (themes of) real life.

As far as vocational education and training is concerned, the pilot projects on KMBO are the best example of this curricular innovation. Within these courses, the concept of 'learning by participation' was implemented. This concept implies a kind of education or training which had to consist of providing or creating guided experiences in practical and realistic settings which had to be transformed into (new) learning experiences. The modularised apprenticeship based courses also bear the signs of this curricular concept. Even watching some of the experiments within MBO we can notice this. In the course of time, however, a change of concept has gradually emerged, which is best expressed by replacing the phrase 'thematic organizing of content' by modularisation (which seems to stress flexibility and efficiency instead of quality of teaching).

Characteristics of a programme unit (or module) within KMBO can be described as:

- a thematic collection of learning objectives concerning actions and activities that in reality exist in occupational practice.
- specification of the learning objectives in job specific goals and social-normative and communicative goals such as attention to labour and power constellations, cooperative working, formulating opinions and so on.
- learning activities that consist of theoretical learning, experimenting with practical skills, application of theory and practical skills

at work experience places and reflecting on as well as assimilating these work experiences.

- (possibilities for) individual learning routes.
- assessment of learning outcomes (process and product) and certification.

The length of the programme units varies within courses and across courses.

Most of the modularised courses within apprenticeship training resemble the short full-time courses. An important similarity between the short full-time and the apprenticeship based courses is that much attention has been paid to designing clusters of modules (eg. complete courses). Especially in the case of the apprenticeship system this is a major feature. Every complete course or cluster of modules is accredited for by the social partners (organized in the 31 branch-specific national bodies) and the Ministry of Education and Science. Single modules have no value in terms of agreed national standards of competence for a specific job. Naturally, single modules have certain value for individual employers and employees, for instance with regard to freshen up knowledge or better performance regarding changed operating procedures and methods.

2.4 Design and development of modules: roles and responsibilities

As for the responsibilities concerning modularisation, there are major differences between the various types of vocational education involved.

In 1979, when the pilot projects on the short full-time courses within senior secondary vocational education started, no curriculum or teaching methods were available. Projects started with self made provisional programmes. At the same time, a broad framework for developing the courses and especially the programme units was set up, combining national and local initiatives (design, experiment, evaluation and implementation had to be a continuous process). This massive operation of developing curriculum documents and programme units was a total education based development. No organizations of employers or employees were systematically involved.

In the case of the apprenticeship system, the branch-specific national bodies are the central actors. In principle, the national bodies are responsible for the quality and assessment in respect to the on-the-job part. Also they are responsible for developing the curriculum documents (outline and attainment targets) for the courses (that must have the approval of the Ministry of Education and Science). Schools are responsible for the off-the-job part.

In modularising the apprenticeship based courses, the national bodies have broadened their influence. They coordinate the total process and

they plan and set out the activities. They are also responsible for the development of the modules including the assessment instruments. Each national body has (created) a department for curricular development in which educational specialists and branch-specific professionals, with expertise in the specific vocational or rather occupational area, work together. This department has actually developed the modules or coordinated their development because, in most cases, groups of teachers and supervisors were involved.

With respect to the long (and short) full-time courses within senior secondary vocational education (MBO) a new structure of responsibility for (the quality of) courses and curriculum reform has recently been developed. This process started in the mid eighties when a reform of the MBO (including integration of long and short MBO courses) was thought necessary. In 1987, national branch consultative bodies for full-time vocational education have been set up. For the MBO especially, the involvement of industry and of the social partners is a new aspect. Also new for the MBO was the fact that the bodies were not organized according to the main distinction within the MBO (four main sectors) but according to occupational branch. Now, in 1992, there are 19 such bodies which consist of a well-balanced representation of all the institutions involved in vocational education (social partners, -denominational segregated- unions of teachers and -denominational segregated- organizations of school boards). The procedure is that the social partners deliver the job profiles and the national consultative bodies translate these into course profiles and attainment targets (which have to get the approval of the Ministry of Education and Science). The process of implementing the revised education- or course profiles (eg. curriculum documents) will be starting after the summer of 1992. At that stage, modularisation might become one of the instruments used to translate the course profiles into a curriculum.

Chapter 3: Problems, consequences and implications of modularisation

3.1 Access and progression

During the eighties, both KMBO and apprenticeship based courses were responsible for widening access to vocational training. However, this is not entirely due to modularisation, designing modularised 'orienting and bridging courses' is a more important factor in this.

As progression within vocational training is concerned, assessment and certification are major problems. This is not accomplished yet. Important to notice is that every actor involved in vocational education and training

agrees upon students completing at least a certain number of modules which offer them a minimum, nationally recognized standard of competencies. This minimum standard of competencies should enable students to practise a job independently. Modularisation seems to have improved the number of students who complete this minimum qualification (although, no exact figures are known).

3.2 The planning of training programmes

One of the major problems is the tension between flexibility (flexibility of choice, flexible progression and flexible adjustment to the changing occupational practice) and quality aspects of the modularised courses (quality of learning and teaching; quality of learning goals for the training programme as a whole; quality of future prospects offered to students by the training programme). In the Netherlands, these aspects of tension between flexibility and quality are important issues and problems that have to be dealt with concerning modularisation. Courses as well within KMBO as within the apprenticeship system, are not as flexible as firstly intended. Modularisation in general, turned out to be an innovation within courses. To some extent, modules even got a fixed place in a course due to 'didactic' reasons and trying to avoid 'fragmentation' of courses or learning processes.

An important characteristic of a training course is the fact that it provides a specific route towards a specific ultimate goal (a particular profile of competencies). It involves a learning process which calls for the structuring of teaching methods. Learning processes and their educational design have a logic of their own. This can result in the need to make different choices in defining and delineating units. A direct translation of clusters of activities of practitioners in a field of work into teaching modules is thus neither possible nor desirable.

In recent SCO-research a number of criteria and considerations were formulated for the process of designing modularised courses. The first question that deserves an answer is: What should the profile of competencies achieved by students at the completion of a course or a certain cluster of modules be? Furthermore, four types of considerations should be taken into account: 1) educational psychological considerations (focusing on the characteristics of learning processes); 2) (professional) logical considerations (focuses on the characteristics and rhythm of occupational practice); 3) considerations related to teaching methods and strategies (focuses on the selection of content and the planning of the learning process throughout the modules); 4) emancipatory considerations.

3.3 Pedagogy and the role of teachers

Teaching materials for a programme unit or module consist of study programmes and exercises for school and workplace. Each module starts with planning a 'learning path' that has to be designed by trainers and students 'in negotiation'. Teachers (on different subjects) and trainers have to work together to realize this planning. Students have their own responsibility to work and learn according to this planned learning route. This cooperative planning and organizing of the (individual) learning process causes lots of difficulties. On the one hand, students and trainers are not used to it, on the other hand, the rhythm of school based learning and workplace based learning is different and matching is not always possible.

Teaching and guiding modularised courses appear to be placing fresh demands upon the teachers and practical trainers involved. As far as teachers are concerned, changes are taking place in four areas: the organization of the learning process; supervision of students (focusing on individual student guiding and counselling); support of the content (teachers must continually keep their knowledge up to date about all aspects and all parts of the entire programme); broadening individuals' experience (for example by project teaching, cooperative learning). The increase in workload for practical instructors is concentrated in four areas: bearing responsibility for the planning and organization of the learning process on the workplace; giving shape to the relationship between theory and practice; broadening individuals' experience (expanding, updating and so on); evaluation and assessment.

3.4 The influence of different actors on modular programmes

With respect to the content of courses within the Dutch education system the influence of the national authorities (eg. the Ministry of Education and Science) is limited, because of the so called 'freedom of education'. No curricular innovation which affects the teaching methods and the organization and planning of the learning process can be imposed by the Ministry. The Ministry is only able to stimulate certain curricular innovations, put a little pressure behind and create pre-conditions or set good examples, for instance by using the education support structure.

Concerning KMBO, the influence of the educational world on content and standards of the modularised courses was dominant. As regards modularised apprenticeship based courses, the influence of social partners and the educational world is rather balanced (although, organizations of employers manage to have greater influence than the one exercised by organizations of employees). This rather balanced influence will be the same with the new MBO.

Very influential on the content and standards of modularised courses is the method used to modularise the courses. This method starts with an extensive study of the activities of practitioners in the field carrying out the job which students are being trained to perform, resulting in job profiles. It is important to note that these job profiles are based upon a breakdown of the activities performed by people working in the field. Clusters of activities are distinguished in the job profile. These are the units from the occupational practice to which the training programme is supposed to refer. The connecting link in the job profile (between the clusters of activities) is the fact that a particular functionary performs all these activities.

A problem is the fact that putting together these clusters of activities does not in itself yield a definition of the content of the whole thus produced (this also applies provisionally to the modularisation of training courses). In some respects, the profile in question is a task profile rather than a job profile (profile of necessary competencies): it is concerned with 'what' a person does rather than with 'how' s/he does it. This question of 'how' in fact characterizes the fully-trained professional, or 'expert'. The risk of this method used as a starting point for modularisation is that this type of competence (which is less 'visible') will disappear 'amongst the modules' because the method only focuses on the 'visible' activities (eg. tasks) of practitioners/professionals. The method is still prevailing. It has been used for apprenticeship based courses. National bodies used and 'translated' the outcomes of this kind of research of occupational practice in various extent. Many national advisory bodies for MBO (for revising the long and short full-time courses within MBO) have also used it.

3.5 Attitudes and reactions to the modular reforms

As far as teachers are concerned, significant changes are taking place in their role because of modularisation. However, their opinions regarding these changes were different: some teachers complained about the devaluation of their competence, while other teachers said that they primarily saw a new challenge in the different approach which they had to take.

Trainers, practical instructors, in general, affirm that the modular system offers them more structure and support in guiding and training their students/apprentices. At the same time, practical instructors find it more difficult to train students within the modular system. Practical instructors clearly express the need for more support and training with respect to their work of guiding and training students within the modular system (for example on assessment procedures, individual guiding, pedagogical competence).

Students seem to have major difficulties with the independency modular courses ask from them. They have problems with planning and organizing their own learning process. They also report that the on-the-job and off-the-job parts of the course (eg. of a module) have not been sufficiently integrated yet and that these parts have been handled (trained and assessed) too independently of each other.

3.6 Implementation strategy

In the Netherlands, an implementation strategy for implementing modularisation within vocational education and training is non existent. However, in 1988, the Ministry of Education and Science produced a policy paper on modularisation. It stated that modularisation had to be implemented in all types of senior secondary education (both general and vocational education and training). However, the current situation is that in general education (HAVO/VWO) as in MBO, only scattered experiments on modularisation have been carried out. Because modularisation has to do with organizing and planning the learning process and with teaching methods, the Ministry can not force this innovation. It is up to the schools or colleges to decide whether they want to modularise their courses or not. The consequences of this lack of pressure coming from the Ministry (either because they are unable to do so or because no priority is given to modularisation) can be felt within MBO as within the apprenticeship system/BBO. BBO-teachers were offered less support then they ought to receive. Concerning the (new) MBO, support on implementing the new outlines and attainment targets of courses, for example by modularising the courses, is lacking.

Chapter 4: Criteria of effectiveness

Primarily, criteria of effectiveness of modularisation should focus on its initial goals. Presently, with the coming reforms within senior secondary vocational education (MBO and BBO) we might aid another goal: Modularisation as an instrument for developing a coherent and flexible system of vocational education and training. Therefore, to evaluate the effectiveness of modularisation, a distinction between 'internal' and 'external' results has to be made. Criteria of the 'internal results' might be: 1) widening access: offering a vocational training course to a various client group, which leads to -at least- minimum competencies for practising a profession and which are, at national level, recognized by social partners; 2) improvement of the success-rate: increasing the number of clients/-students who successfully complete a cluster of modules (eg. a modularised course), which standards are nationally recognized by social partners; 3) improvement of progression within modules and modularised voca-

tional training courses (eg. lines of study).

Criteria of the 'external results' might be: 1) improvement of the number of clients/students who find a job or enter further (vocational) education and training; 2) improvement of the students' or clients' capacity for learning and of their capacity for adaption to changing or new situations (mobility within and across jobs; career development).

As far as the Netherlands are concerned, evaluation of effectiveness should also focus on the results with respect to the implementation of modularisation (eg. of its goals); for instance regarding the quality of the outline and goals of modularised courses; the quality of teaching and counselling; type of assessment procedures; support for teachers and trainers and the possibilities for transition.

Chapter 5: Key issues

Key issues that might be interesting in the second year of the PETRA-partnership are:

1) The extent to which modularisation can be an instrument in creating a flexible and coherent system of vocational education and training that meet up to national standards of competence. In deepening this issue, the tension between flexibility and quality as has been mentioned in section 3.2 might be of interest. 2) The quality of the -design of- modularised courses (eg lines of study, clusters of modules). It would be most interesting to compare modularised courses (lines of study, clusters of modules) in the different countries with respect to similar criteria and considerations as has been mentioned in section 3.2. This implicates a study of (a number of) modularised courses (lines of study, clusters of modules) on formulated learning outcomes (competencies) for a course/cluster as a whole, the way these courses/clusters have been 'split up' into modules (or gathered together) and -possibly- the advocated sequence of taking up modules. 3) The planning and organization of learning processes and the format of the teaching methods.

Chapter 1
Context and focus

1.1 Features of the Dutch education and training system

In the Netherlands, full-time education is compulsory for the first ten years (six years of primary education and four years of secondary education). The first two years of primary schooling (nursery school, age four to six) are not compulsory. As for the eleventh year (roughly age 16 or 17) part-time education is compulsory for two days a week.

Dutch secondary education is exceedingly hierarchical in structure. At the end of primary schooling, pupils are allocated to junior secondary vocational education (LBO, duration four years), junior general secondary education (MAVO, duration four years), senior general secondary education (HAVO, duration five years) and pre-university education (VWO, duration six years). Selection and allocation are based chiefly on pupils' proven learning abilities in the abstract/theoretical subjects. The curriculum in the first year (sometimes two years), known as the transition class, differs as between AVO/VWO and LBO.

For most pupils, allocation to AVO/VWO or LBO occurs at the very moment they enter secondary education (a small number spend one or two years in joint AVO/LBO transition classes). In earlier years, there were separate schools for LBO (even different LBO-schools for different vocational sectors), MAVO and HAVO/VWO. Over the past ten to fifteen years a more frequent merger between these separate schools has occurred: merger between different sector oriented LBO-schools, between LBO and MAVO-schools, between MAVO and HAVO/VWO-schools and sometimes even between LBO-, MAVO and HAVO/VWO-schools. The curriculum for AVO/VWO is predominantly academic with some minor exceptions (eg. programmes on 'meeting the world of work').

The admission to vocational education and training occurs after ten years of full-time education. LBO should be regarded as a preparatory branch of vocational education at junior stage which is a combination of general and pre-vocational education. (A scheme of the Dutch education system is given in appendix 1)

Vocational education and training

A short description of the categories of -formal- vocational education and training:

Junior secondary vocational education (LBO) covers four school years. Years 1 and 2 are transition years, though pre-vocational subjects are introduced as early as the second year. Years 3 and 4 are related to a

specific occupational field. The examination includes six subjects, of which two or four are vocational oriented. The content of the vocational-oriented subjects is still relatively general and has an introductory character; students are not intended to enter the labour market without further vocational training. A percentage of those successfully completing LBO do, however, receive no further education (in 1989: 20% girls and 16% boys). A large percentage pursue their education within the apprenticeship system or in other forms of part-time education (in 1989: 58% girls and 51% boys). A third group of students continue in full-time education, mainly in senior secondary vocational education (in 1989: 22% girls and 34% boys).

Senior secondary -full-time- vocational education (MBO) covers either three or four school years depending on the length of the practical training period and on the sector (for instance: technical courses cover four years including a one-year practical training period and administration courses last three years including a training period of six weeks). Two-year full-time courses are also available (short MBO or KMBO). In August 1991 the (schools for) short-MBO-courses have all been absorbed into the MBO-colleges.

The three- and four-year courses either train students for jobs in middle management (EC level IV) leading to related courses in higher vocational education, or can be regarded as 'intermediate' courses which train students to work as independent tradesmen (EC level III). Entry qualifications at this level are LBO or MAVO certificates (HAVO -or even VWO- students who have not completed their courses but who do have a certificate that proves their transition from HAVO/VWO year 3 to HAVO/VWO year 4 can also enter MBO).

The two-year courses train students for junior positions and concentrate mainly on practical work (EC level II). Admission to these courses is also open to pupils who left the first stage of secondary education without a certificate (but who have completed ten years of full-time education). For those students unable to make a choice or whose qualifications are inadequate for admission, there are (within the MBO-colleges) 'orienting and bridging courses' lasting at most one year available.

Courses are divided into four sectors: engineering; administration, commerce and trade; personal and social services and health care; agriculture and natural environment.

Day-release courses (BBO) and apprenticeship training: The apprenticeship training consists of on-the-job training combined with part-time courses in related theory and general education for one or two days a week; it is therefore a dual system. There are three levels within the

apprenticeship training. At the first (primary) level, courses generally cover two years and train students for junior positions (EC level II). The degree of qualification and competence students attain after completing the primary courses are officially equivalent to two-years full-time MBO-courses. The required entry qualifications are LBO or MAVO certificates. However, pupils lacking -formal- qualification at the junior level of secondary education (and having followed ten years of full-time education), can enter a number of the courses within the apprenticeship system by first following an 'entry' course of one year at the most. In addition to the primary courses there are follow-up courses of a more specialized nature: courses on the so called secondary and tertiary level (EC level III and sometimes even IV).

The 'off-the-job' part of apprenticeship training is mostly concentrated in regional apprenticeship training institutes (BBO-colleges). 'National bodies' assist in negotiation of study/work contracts between companies and apprentices. These national bodies are funded by the government but they are governed by boards consisting of social partners and representatives of the educational world. They submit course and examination syllabuses (attainment targets) for ministerial approval, develop curricula, organize examinations and award certificates. There are currently 31 such bodies, each covering roughly one branch of industry.¹

Higher -full-time- vocational education (HBO) comprises three to four-year courses at a highly specialized, professional level. It includes a large number of different courses, roughly divisible into the same sections as within MBO. HBO comprises theoretical education at tertiary level, combined with practical training periods and on-the-job experiences. The knowledge level is frequently comparable to that of university courses, but presentation and competence is oriented more towards practical application rather than research. The admission requirement imply a HAVO-certificate or a MBO-certificate (of one of the long variant), but a percentage completing VWO also continue with HBO.

HBO is mainly concentrated in large institutes for higher vocational education, a proportion of which provide courses in several different sectors. These institutes operate to a large extent independently of the national authorities. Unlike the situation within MBO, here the attain-

¹ Depending on the branch/national body, the off-the-job part (provided by BBO-colleges) covers one or two days a week (usually one day a week). Students with an apprenticeship agreement starting their apprenticeship training at their eleventh year of schooling, when education is compulsory for two days a week, are allowed to go to school only one day a week if the off-the-job part of their training is only one day a week.

ment targets and units of certification are not set by the national authorities (eg. The Ministry of Education and Science) but by the HBO-colleges themselves. National authorities have equally no hand in the examinations.

Other provisions of vocational education and training are:

- part-time MBO (offered by MBO-colleges, HBO-colleges or AVO/-VWO-colleges for adults) providing the same qualification as full-time MBO;
- several types of (pre-)vocational training for the unemployed;
- (pre-)vocational training courses within the context of adult education.

Public/private education and the Constitution

The Dutch education system is divided into public and private education. Public schools are set up and maintained by the State or by the municipal authority, private schools by artificial persons in private law such as foundations and associations. Virtually all public schools (especially those providing vocational education) are run by the municipal authorities. Private schools can be divided into denominational and non-denominational. Of the Dutch educational system as a whole, some 2/3 currently falls into the category of private education. Within vocational education the percentage is even larger (85%).

The distinction between public and private education is embedded in the Constitution and elaborated in various educational statutes. The statutory provisions with regard to organization and examination are broadly the same for both public and private schools which are also funded according to the same standards. Within this broad framework, private schools are free to set their own curricula and to determine the content of their teaching. Private schools are also free to appoint teaching staff and to choose their own teaching materials. Government (eg. the Ministry of Education and Science) just monitors the quality of the education provided and as has been said private schools have to meet the same standards as public schools in regard to examination and certification (which are set by the national authorities).²

The consequence of this so called 'freedom of education' (for private

² In general, the distinction between private and public schools does not mean school fee differs (school fee is established by the government; a school, either private or public, may raise a minor additional fee for special facilities/projects/trips). However, private schools are permitted to refuse pupils/students to enter classes, whereas public schools are not permitted to do so.

schools) which is embedded in the Constitution and the high proportion of private schools is the lack of a national curriculum. Therefore, even public schools are free to set their own curriculum and determine the content of their teaching. In general, teaching materials are developed by a variety of commercial and non-commercial institutions and publishing companies, although there is a National Institute for Curriculum Development (SLO) which is funded by the Ministry of Education and Science. This national institute should influence curriculum development and the teaching materials which schools use for their teaching. Another consequence of this private/public segregation is the specific character of the education support structure which is also partly denominational segregated (eg. three national educational advisory centres: a non-denominational, a Protestant and a Catholic advisory centre). There also exists a (non-denominational) national advisory centre, specific for vocational education and training which plays an important role in the innovations and reforms taking place within vocational education and training: The Centre for Innovation in Vocational Training for Industry (CIBB). Also, there exist a national institute for examination and assessment: the National Institute for Educational Measurement (CITO).

The strong position occupied by the private sector within vocational education is a result of its historical evolution and the fact that the legislation in force prior to 1968 (Secondary Education Act) assumed that establishment for vocational education would be founded by private initiative. Such initiatives were primarily taken by employers. This explains why the percentage of private non-denominational establishments is particularly large in this type of education. In fact, because of the policy followed by the government (see below) which is to stimulate merger between schools, the number of private denominational schools is rapidly declining, while at the same time, the number of private non-denominational schools is increasing.

Major policies followed by the government

With regard to the first stage of secondary education, the government together with the Lower House of the States General have decided to introduce a common curriculum (comprehensive education) for the first three years of secondary education. This implicates that every school which provides education at junior level (eg. HAVO/VWO; MAVO; LBO) has to provide a three-year-education programme for all kind of pupils meeting the same standards (attainment targets). The Ministry of Education and Science is stimulating merger between schools so that all schools will be able and will have enough experience to respond to the needs of different pupils. Merger between schools also will have its effect on senior secondary education: the transition from junior to senior

secondary education will then implicate that pupils will be able to stay at the same school (because the school will provide LBO, MAVO, HAVO and VWO). The implications for MAVO and LBO are not clear yet. Because of the fact that LBO and MAVO have a four-year-programme at this moment one can speculate (or can fear that) MAVO would disappear and that the upper class(es) of LBO would be integrated into MBO- and BBO-colleges (which implicates that pupils who completed their junior stage have to follow vocational education at another school). Another current scenario (developed by the Ministry, forced by pressure of interested parties from the LBO-schools) in order to preserve LBO is to develop a separate LBO-stream. This stream should be starting in the third year of comprehensive education and combine (pre-)vocational education and comprehensive/general education leading within four or five years to a LBO-qualification.

Vocational education and training at senior stage is about to undergo radical restructuring. The first phase has ended in August 1991 with the integration of short and long full-time courses and the merger between different sector oriented MBO-schools into MBO-colleges (as a consequence of the SVM-act). The policy of the Dutch Ministry of Education and Science is to stimulate further integration and merger between BBO-colleges and MBO-colleges and even colleges for general and basic education and training for adults leading to similar colleges as the American and British community colleges (regional education and training centres).

In the chapters two and three we will further discuss this subject of policy and development within vocational education because of its links to modularisation.

1.2 Focus of the study

This study focuses on modularisation within senior secondary vocational education which students enter at the age of fifteen or sixteen (after completing ten years of full-time education):

- full-time senior secondary vocational education: short and long courses (KMBO and MBO);
- apprenticeship training including day-release courses (BBO).

As we already mentioned, senior secondary vocational education has to be transformed into a coherent and flexible system of vocational education and training in which modularisation will be an issue.

We do not focus on junior secondary vocational education because of the (coming) reforms within the junior stage of secondary education. With regard to the scope of the PETRA-project, higher vocational education will be left out.

Chapter 2
Characteristics and objectives of modularisation

2.1 The scope of reform

In the Netherlands, the date of introducing modularisation and the degree of implementation varies across the different types and branches of vocational education and training. This is not surprising as we bear in mind the highly differentiated and fragmented structure of the system of vocational education and training and the 'freedom of education by law'. No curricular innovation which affects the teaching methods and the organization and planning of the learning process can be imposed by the government. The Ministry of Education and Science is only able to stimulate certain curricular innovations, put a little pressure behind and create pre-conditions or good examples, for instance by using the education support structure. Concerning modularisation we have to differentiate between the KMBO (short courses MBO), the MBO (long courses) and the apprenticeship system:

KMBO

In August 1991 the KMBO-courses were (formally) integrated with the long full-time courses into institutions for vocational education and training (the first step towards 'regional education and training colleges'). These short courses started in 1979 as pilot projects. They were considered necessary because the admission requirements for long full-time courses and courses provided within the apprenticeship system were too severe. Students who had no diploma on the junior level (vocational or general) were not allowed to enter the senior level. Especially concerning the apprenticeship system there was, at that time, a shortage of places in industry where students could gain work experience. Therefore, the on-the-job part of the apprenticeship training could not be attended and no assessment could follow, this leaving students without a grade.

The short full-time courses were considered to be the equivalent of apprenticeship training at primary level. These courses also had to respond to the needs of those students who, before the introduction of the short courses, dropped out of the education system. To enter the courses, a student should, at least, have followed ten years of full-time (compulsory) education (with or without a formal degree).

The programmes of all these (eighteen) vocational courses and the 'orienting and bridging courses' provided within the pilot projects were designed in a manner that would now be called 'modularised'. The curriculum was divided into programme units (modules) related to

relevant and realistic units of occupational practice. The pilot projects had been experimenting with this type of vocational courses (and modularisation) for eight years until 1987. After many changes in governmental policy, it was decided that the shorter courses should be integrated with the longer ones. Pilot projects were not permitted to carry on independently, as KMBO-schools.

In national statistics, no separate figures are given for KMBO-students. However, earlier research on KMBO showed that in 1986, approximately 24,000 students were attending pilot projects (which is only a small percentage of the total population and of the MBO-population, as shown in appendix 2. On the other hand, the figure also shows that the pilot projects managed to offer a necessary provision).

BBO and apprenticeship training

As for the apprenticeship system, the situation is much more complex. In 1992, there are 31 so called branch-specific national bodies (run by social partners and representatives of the educational sphere). These bodies are responsible for and provide apprenticeship courses within a specific branch. Some of these provide a large number of courses, others provide rather few, depending on the share of the specific branch in the national economy (for example, if we compare electrotechnics with pastry-cooks). The off-the-job part of the apprenticeship training is provided by regional BBO-colleges which are not branch-specific (and funded by the Ministry of Education and Science).

The extent and route of introducing modules varied across the branches. For example, the national body for apprenticeship training of the building trade started to modularise its courses (without using this term) in the 'seventies, whereas other bodies still have to start modularisation. Most of the national bodies started modularising their training system around 1985. In most of the cases, they started by introducing pilot projects. Approximately half of the national bodies (including the largest ones) can presently provide a revised branch-specific system of modular training courses within their apprenticeship system.

All BBO-colleges have at least three to five years of experience with modular courses because they are not branch-specific (however, not every teacher or tutor has the same kind of experience with modularisation; some have none because the branch-oriented courses they deal with are not yet modularised).

In school year 1989/1990, about 150,000 students were attending day-release courses (of one of the 31 national bodies) within BBO-colleges (see appendix 2 for more figures).

MBO

Within senior secondary full-time vocational education (long courses), only some courses have been modularised. In recent years, new types of training such as logistics or tourism have been designed as modularised courses. Also, there have been some experiments in the field of administration and commercial education with the support of the National Institute for Curriculum Development. There are individual MBO-colleges which are experimenting with modularisation. Within senior secondary personal and social services and health care education some courses have been modularised for several years now.

Presently, almost all MBO-schools turned towards the concept of modularisation and the way they can implement it. This is also part of the integration of the short and long courses (in which short courses might have a stimulating role). Moreover, all full-time courses (the short and the long ones) should be revised according the outcome of the examination done by 19 branch-specific national advisory bodies (consisting of representatives of both social partners and educational institutions) (see 2.4). They examined full-time vocational courses on the links between education and occupational practice. One expects modularisation to be a means of revising full-time courses. However, this is a process which still has to start.

In school year 1990/1991, approximately 290,000 students were attending MBO-colleges (full-time courses of 2, 3 or 4 years).

Participation rates

During the 'seventies and 'eighties, the participation rate of the 15 to 18 years old have increased rapidly, especially participation in full-time education. We compare the figures of school year 1988/1989 to the figures of school year 1971/1972. We have to bear in mind that, in 1971/1972, full-time education was compulsory up to nine years and part-time education in the tenth year for one day; in 1988/1989, full-time compulsory education was ten years and part-time education, in the eleventh year of schooling, was compulsory for two days a week.

- In 1988/1989, from the 15 years old (who were in general either in their ninth or tenth year of education) 99% were enrolled in full-time education; for 1971/1972 this figure was 85%, 9% attended part-time education and 6% followed no education at all;
- In 1988/1989, from the 16 years old (who were in general either in their tenth or eleventh year of education) 93% were enrolled in full-time education, 5% in part-time education and 2% followed no education at all; respectively the figures for 1971/1972 were 63%, 14% and 23%;
- In 1988/1989; from the 17 years old (part of whom were in their

eleventh year of education) 78% were enrolled in full-time education, 11% in part-time education and 12% followed no education at all; respectively the figures for 1971/1972 were 44%, 16% and 40%;

- In 1988/1989, from the 18 years old 62% were enrolled in full-time education, 12% in part-time education and 27% followed no education at all; respectively the figures for 1971/1972 were 30%, 15% and 55%.

Additional figures for 1987 concerning the 19 and 20 years old (appendix 2) show that:

- of the 19 years old females, 48% were enrolled in either full-time or part-time education and of the men, 62%;
- of the 20 years old females, 34% were enrolled in either full-time or part-time education and of the men, 49%.

We see an impressive increase of participation rates, especially within the 16-18 age group. This increase is almost entirely due to the increased participation in full-time MBO (KMBO and MBO). At present, at the second stage of secondary education, the number of students enrolled in vocational education and training is larger than the number of students enrolled in general and pre-university education: in 1987, 57% of the 17 years old were following courses within vocational education and training, 33% attended general education and 9% did not follow any kind of education or training (see appendix 2).

2.2 Reasons and objectives

Modularisation has its roots in a number of developments; there are both school based, curriculum-oriented reasons and industry-oriented reasons for modularisation. Important reasons for modularisation within vocational education and training can be located around 1980, when an economic recession started to develop. The problems concerning vocational education and training were formulated, in short, as follows:

- inadequate transition from school to work;
- high level of youth unemployment;
- shortage of well qualified professionals;
- a diversified, fragmented, not client-oriented and rather obsolete vocational education and training system.

However, each sector of the vocational training system has its own history, slightly different reasons for modularisation and therefore different aims and objectives. By specifying reasons and objectives for each sector of the vocational training system, starting with KMBO, we also get a historical picture.

KMBO

The reason why the curriculum of the short full-time courses has been modularised has to do with its origin. The short full-time courses have been developed to fill in a gap existing in the (vocational) education system, especially with regard to dropouts (or disadvantaged) in the 16 to 18 age group. Essentially, the short courses have their roots in the movement of the 'sixties and 'seventies which strove for equal opportunities for young workers under the age of 19. At that time, no educational provision was available for young workers who did not like to enter full-time courses but still felt the need to learn something. Also, the low participation rate of the 16 and 17 years old was worrying the government.

In the late seventies, several specific commissions on educational provisions for 16 to 18 years old suggested to lengthen the duration of full-time compulsory schooling and the introduction of part-time compulsory schooling for the 16-18 age group. Additionally, they introduced a new curricular concept for this kind of part-time education and this group of youngsters: 'learning by participation'. This concept implies a kind of education or training which had to consist of providing or creating guided experiences in practical and realistic settings which had to be transformed into (new) learning experiences. The government (eg. the Ministry of Education and Science) adopted the ideas suggested by these commissions.³ Institutes for part-time, non-formal education and BBO-schools had to create this kind of practical and non-formal education. This experiment was never carried further than the experimental stage, due to political disagreement, among other things. The arguments around (political) emancipation have been overruled and they vanished in time.

In 1979, a weaker version of the concept of 'learning by participation' was implemented by creating short full-time (!) vocational courses for the disadvantaged (especially the unemployed youngsters). The idea of using students' social experiences in the contents of a learning programme was somewhat abandoned. The idea of combining practical and theoretical learning and arranging the content of the courses according to realistic units of occupational practice remained. A focus on students' individual approach was now prevailing.

The aim of this short courses (two years) was to offer students who, for some reason, did not fit in the more formal educational system, a basis of professional competence. The objectives by structuring the contents into

³ In 1971, full-time education became compulsory up to nine years and part-time compulsory schooling for one day a week was introduced for the tenth year. In 1975, this was changed in 10 years full-time compulsory schooling followed by 1 year part-time compulsory schooling for two days a week.

clear and 'realistic' units are, on the one hand, to make individual routes possible and, on the other hand, to offer a meaningful programme.

BBO and apprenticeship training

In the case of the apprenticeship system, the reasons for modularising the courses vary throughout the branches (national bodies). Although the same kind of reasons as described above can be found here too, because one deals mainly with the same sort of students, still, the economic reasons and the necessity of innovating the courses are much more obvious here.

At the time short full-time courses were implemented, an economic recession was developing. Employers, either said there were too many youngsters so that they could choose the 'best' or they stated that they had no resources left for training (short courses filled in this gap). At the same time, however, it became clear that the courses within the apprenticeship system had become somewhat obsolete (did not meet the changed requirements for professional competence) and inefficient (too many youngsters dropped out). According to leading employers, industrialists and the government, the links between education and industry were severely disturbed. This was the situation in the early 'eighties.

After a series of discussions and analyses concerning this aspects, the government and the business community decided to strengthen the apprenticeship system (as a consequence of the deliberations on a advice of the 'Commission Wagner' -named after the chair who was a leading industrialist- concerning the links between education and industry, 1983). It was agreed, effort should be undertaken in order to double up the number of apprenticeship places within enterprises. Furthermore, a revision and even a reform of the courses was thought necessary. The system had to become more flexible with regard to both individual needs and the rapidly changing requirements imposed by industry, caused by the ongoing technological and economic developments. In later years, employers in a series of branches discovered a shortage of (qualified) workers, their number continuing to decrease rapidly (due to demographic factors, among other things). This imposed a stronger pace in revising and investing in apprenticeship training, especially concerning a better adjustment to individual needs (less strict admission requirements, give credit to prior learning, adjustment to the needs of women, etc.). From that time (1985-1988) modularisation became an issue.

Flexibility appears to be an important goal when modularising apprenticeship based courses. However, the courses (as a whole) should be made more related to occupational practice (or, at least, remain branch-specific). This stressed link with occupational practice sets the pre-conditions for the extent to which the training system might be flexible (for instance

transition during the course from one branch specific training system to another might be difficult unless students start all over again, see section 3.1 and 3.2). In a sense, the objectives of the modularisation resemble the ones we described in the case of the short full-time courses, while the reasons, partly, differ.

MBO

One should notice the fact that the experiment of 'learning by participation' (which has been implemented in the form of short full-time courses) did have some followers within the sphere of the long courses. In 1980, ten schools for senior secondary full-time vocational education started experimenting with this type of courses. However, the experiment slowly faded away, it never became a major project.

Nevertheless, all reasons, aims and objectives regarding modularisation that have been mentioned above, apply for the long MBO-courses too. There is a high dropout rate (nearly 50%). More flexibility with regard to individual needs and to the demands imposed by the industry is necessary according to (some of) the social partners and the government. A recent (and possibly urgent) reason is the strive towards a coherent system of vocational education and training (also designed for adult workers, unemployed, women, immigrants, etc.). If the long courses within senior secondary vocational education will not be revised, this coherence will remain an illusion. However, most employers and students who managed to get their grade do not complain about the long full-time courses. Which of the reasons will finally cause a major breakthrough in this 'bastion' still remains to be seen.

The place of modularisation within policies and models for the curriculum as a whole

Modularisation as such is no major policy of the government. Its two main concerns are:

- a re-structuring the vocational training system in a coherent and flexible system for vocational education and training for youngsters and adults, employed and unemployed. The intention of the Ministry of Education and Science is to stimulate the establishment of large regional colleges which operate partly independently of central authorities and have well-organized relations with local industry, other schools and educational provisions, job centres and so on.
- b making courses more related and responsive to (changes within) occupational practice.

Modularisation is only one of the means to reach those goals. Modularising courses might implicate that the training system will become more

flexible and coherent. Because of certification, students might be able to make easy transitions from one course to another; also, workers who want to or have to freshen up their knowledge and competencies might be able to enter courses eg. modules. Modularisation might also be helpful in relating the content of courses to occupational practice by identifying units of competencies which are required in practising a profession. Also, modularisation is seen as a means to respond to individual needs of students. Modularisation might make it possible to determine individual learning tracks. At the same time the necessity for a well-organized student monitoring system is stressed and might become urgent because of modularisation.

However, presently, the government is less stressing modularisation as a mean for creating a flexible, coherent, client- and industry-oriented system of vocational education and training. The current policy is to stimulate the creation of different forms of dual learning courses: MBO-colleges (in the future 'regional education and training centres') and enterprises will be stimulated to create courses which consist of combinations of on-the-job and off-the job learning. Those 'dual' courses are considered to be an important instrument to create a flexible vocational training system which should respond to the specific needs of students/clients and the (ever) changing needs of industry. Also, the transformation of the full-time courses into 'dual' courses is considered as very important with regard to the integration between BBO and MBO and other part-time courses.

This current policy followed by the central authorities (eg. the Ministry of Education and Science) is an answer to a recent advisory report of a national commission regarding the links between education and industry. This commission was established by the Ministry of Education and Science and had to come up with unorthodox and fresh ideas about the possibilities to improve the relationship between education and industry. Chair of the commission was a leading industrialist, members were representatives of the educational world and social partners. Their advice (1990) was to come to (real) agreements between schools and enterprises, students and schools to create 'dual' learning paths. Modularisation, considered as a innovation regarding teaching methods, organizational planning and even a content-oriented reform, has been a minor issue in the deliberations about this advice. At this moment, MBO-colleges have to deal with both the -former- stimulated innovation to modularise their courses (for which they get some support from the national education support institutions) and the presently stimulated reform to transform their courses into 'dual' courses (for which they have to establish more and better links with local industry).

2.3 Concept and characteristics

Modularisation, such as implemented in the Netherlands, primarily focuses on re-arranging the contents of courses. There are historical roots going back to the time when people were fighting for equal opportunities in education. One of the activities within this movement was that of reforming the curriculum by 'thematically' re-arranging the content of teaching. By 'thematic' is understood that the content (of courses) should not be divided into artificial units that do not exist as such in reality (as is the case with the traditional subjects) because it is not the way children/students/people go through reality. Rather than into artificial units, the content of teaching should be divided into meaningful units which should have a clear relation with (themes of) real life.

'Thematic re-arranging of content' was implemented at first through projects and experiments in primary and secondary general education. The aim was to make the contents and the programmes of the courses more meaningful for all students/pupils and to develop new teaching methods, such as experience based learning. The curriculum had to be more socially oriented, allowing more consideration for the experiences of all the students and a guided exploration of new fields that had to be transformed into new (learning) experiences/outcomes.

A similar movement can be noticed within vocational education. The pilot projects on KMBO are the best example of this curricular innovation. The modularised apprenticeship based courses also bear the signs of this curricular concept. Even watching some of the experiments within MBO we can notice this. In the course of time, however, a change of concept has gradually emerged, which is best expressed by replacing the phrase 'thematic organizing of content' by modularisation (which seems to stress flexibility and efficiency instead of quality of teaching). We will sketch this gradual change in concept which shows that modularisation in the Dutch vocational education and training system bears signs of both concepts.

Thematic re-arranging of content

The concept of learning by participation explains much about the characteristics of the short vocational full-time courses (and also, partly, about the characteristics of the modularised courses within apprenticeship training and MBO). The central innovative components of learning by participation are the clustering of curricular contents around 'job specific key activities', the encouragement of independent student activities and the integration of theoretical and practical learning situations. In a concrete outline of the educational innovation, practical off-the-job and on-the-job situations should be used alternated with classroom situations.

Another important feature is cooperative learning.

By means of designing programme units (modules), these components of the concept of learning by participation have been made concrete.

Characteristics of a programme unit can be described as:

- a thematic collection of learning objectives concerning actions and activities that in reality exist in occupational practice.
- specification of the learning objectives in job specific goals and social-normative and communicative goals such as attention to labour and power constellations, cooperative working, formulating opinions and so on.
- learning activities that consist of theoretical learning, experimenting with practical skills, application of theory and practical skills at work experience places and reflecting on as well as assimilating these work experiences.
- (possibilities for) individual learning routes.
- assessment of learning outcomes (process and product) and certification.

The length of the programme units varies within courses and across courses. In general, a certain specific cluster of programme units forms a course (each programme unit belongs to a specific course). The attainment targets for the complete course are in principle on the same level as their equivalents within apprenticeship training (same competence level). Students can work their way through the programme units and the course on their own time schedule. There is no final exam.

Occupational relevance and flexibility

Most of the modularised courses within apprenticeship training resemble the short full-time courses. Still, there are some differences:

- Compared to the short full-time courses, the relationship between the modularised apprenticeship based courses and the occupational practice is much more direct. In many cases, the more social-normative oriented objectives are left out. Clusters of tasks or activities that are 'visible' within occupational practice have been the main criterium in designing modules. Skills such as (personal) management skills, communicative skills, etc. or core skills did not get their place within the curriculum (modules).
- In most cases, the integration of theoretical and practical learning situations did not get a 'didactic' translation (implementation in the planning of the learning process). In the short full-time courses, a 'cyclical' learning process has been designed. All the modules within apprenticeship based courses have their on-the-job and their off-the-job part. However, both parts, more or less, remain separate and, in most cases, practical learning is limited to

on-the-job learning and theoretical learning is limited to off-the-job learning. Sometimes the on- and off-the-job parts are even separated in time (students do at one time their on-the-job part and at another time their off-the-job part).

Whereas the short full-time courses have been designed as courses which were structured into programme units, modularisation within apprenticeship training can be regarded as re-arranging a branch-specific system of courses. The question of coherence between courses both at the same and different levels got more attention. Thus, it happens that modules occur in different courses. Sometimes, exactly the same modules occur and sometimes modules are a little adjusted to the level or to the specific job they relate to. This means the branch-specific training system has become slightly more diffused: instead of a supply of explicit courses, a amount of modules, which are more loosely structured according to specific lines of study (which are accredited for by social partners and the national authorities), is provided.

An important similarity between the short full-time and the apprenticeship based courses is that much attention has been paid to designing clusters of modules (eg. complete courses). Especially in the case of the apprenticeship system this is a major feature. Every complete course or cluster of modules is accredited for by the social partners (organized in the branch-specific national bodies) and the Ministry of Education and Science. Single modules have no value in terms of agreed national standards of competence for a specific job. Single modules only have value if they are part of a cluster of modules that meets agreed national standards of competence. Naturally, single modules have certain value for individual employers and employees, for instance with regard to freshen up knowledge or better performance regarding changed operating procedures and methods.

With respect to the apprenticeship based courses at primary level, these kind of agreements on national standards are very important. Apprentices that do not complete a course (eg. a specific cluster of modules) only have their certificates and no qualification which is accredited for by the social partners. On the secondary and tertiary level, the principle is the same, however apprentices at that stage already have a grade at primary level (or some equivalent).

The characteristics of apprenticeship based modularised courses vary across the branches. Within the care and service professions the concept and characteristics of modularisation resemble much more the concept of learning by participation than is the case in technical branches. The modularised apprenticeship based courses within the distribution trade even seem to be based on former ideas of a combination of 'thematic'

and 'discipline oriented' (traditional subject oriented) planning and organization of the learning process (as has been a former experiment in primary schools).

The courses provided by the technical branches have much in common with each other. These are more or less structured along the same principle: 'complexity of operation'. Courses start with 'basic modules' (single operations) followed by 'professional modules' (more complex technical operations) and completed with 'integrative modules' (in which all comes together in different job specific settings). Coherence between courses within a branch-specific system of courses is realized by letting 'basic' and 'professional' modules 're-appear' in different courses (eg. within clusters of modules that implicates a national recognized qualification or competence). Because of certification to each module, students who have completed one course are able to take up some additional 'professional' and mainly 'integrative' modules to get a second qualification on the same level (eg. for a second specific job).

Efficient studying

To understand modularisation within the long MBO-courses we have to make a short historical remark. It is important to observe that the thematic structuring of courses (which we regard as the roots of modularisation) within primary/general education as well as within vocational education, were at first developed in specific projects or experiments. It has always been an answer to specific problems or thought necessary in regard to particular client groups, although supporters of this 'curricular concept' from a political point of view thought every student had to benefit from it (because only this would lead to real equal opportunities). Modularisation has overcome this status of being a specific solution to specific problems, for even within higher and academic education courses are now modularised. However, because of the fact modularisation is (no longer) regarded as a specific solution to a specific problem, a partial break is shown with its historical roots and its predecessors. A different focus on the concept of modularisation has emerged.

In this concept modularisation is regarded as just an instrument to make a course (regardless of the content) manageable for individual students so that they are able to complete their course successfully. In this perspective, the emphasis may come to be placed upon 'splitting up' a course in small steps that students can handle. The main aim here is advocating 'effective teaching and studying'. Although the question of 'how to split up', bearing in mind the content or the core of the course is not totally neglected, the focus on modularisation seems to be shifting by just stressing efficiency. In the late 'eighties when modularisation became the new phrase for 'thematic structuring of content', the shift of focus has

been slightly made. Some projects within general education are the best examples in this: within subjects the -old- content is divided into six weeks tasks that students have to manage individually. Those six-week-tasks are called modules.

This latter concept of modularisation has been implemented at some schools for senior secondary full-time vocational education (the long courses). The curriculum and the learning goals stayed the same, within subjects the content has been split up. This perspective on modularisation is not at all dominant within the short full time courses or the apprenticeship based courses. The questions of thematic restructuring of contents and innovation of the complete curriculum are much more dominant and are still being related to the question of how the number of students who complete their courses can be improved. However, in the apprenticeship system sometimes a shift in emphasis to the concept of 'efficient studying' is also noticeable (especially regarding those systems of branch-specific programmes that modularised their courses in the late 'eighties and also especially regarding technical branches). As has been stated earlier on, within the system of long full-time courses there are also courses or schools that regard modularisation as 'thematic re-arranging of content'. It concerns some courses in the sphere of health care, graphics, courses on tourism, logistics and other, mostly new, courses. Schools that tend to implement a content-oriented way of modularisation, are more likely the ones that have been involved in an experiment on learning by participation.

From the above mentioned we can conclude that, in the Netherlands, the modular reforms are a mixture of:

- reforms that reorganise a part of the education system, covering several courses as is the case within apprenticeship training and might, in the future, cover the whole system of vocational education and training (considering the future reforms within full-time MBO and the integration of long and short full-time courses and part-time (BBO) courses).
- reorganisation of the curriculum within courses as it actually occurs within (K)MBO and also within apprenticeship training.
- innovation of methods of teaching and learning as it occurs within KMBO and -to a lesser extent- within apprenticeship training, but hardly within MBO.

2.4 Design and development of modules: roles and responsibilities

As for the responsibilities concerning modularisation there are major

differences between the various types of vocational education involved.

KMBO

In 1979, when the pilot projects on the short full-time courses within senior secondary vocational education started, no curriculum or teaching methods were available. Projects started with self made provisional programmes. At the same time, a broad framework for developing the courses and especially the programme units has been set up, combining national and local initiatives (design, experiment, evaluation and implementation had to be a continuous process). At national level, national development groups were established. Every national group worked out a curriculum document with respect to one specific course. The groups consisted of teachers working on the projects who were teaching that specific course and of educational and discipline/subject specialists. By 1981, the curriculum documents (eg. outline of the course and attainment targets) were ready. Then, at local level, groups were formed to conduct special development tasks which concerned translating the curriculum documents into concrete programme units. Each course or curriculum document was covered by two to five groups. These groups consisted of teachers working for different projects in the region. Each group was supported by an educational consultant. These groups did not manage to have the work done in time (1984). Therefore, in 1984, new national groups for each course were formed to complete the work (also consisting of teachers working on the projects and of educational consultants).

All these activities were coordinated by a national supporting team that consisted of eight institutions for educational support (due to the denominational segregation there were eight instead of five institutions; a ninth institution -the National Institute for Educational Measurement- joined the group in 1986). Although, for some courses, the design of the programme units was not completed yet, the Ministry of Education and Science decided in 1986 that the phase of programme development was closed (no more funding). Thanks to local funding (achieved by the projects themselves) some groups could continue their work. At the next stage, the projects had to integrate with the long full-time courses.

This massive operation of developing curriculum documents and programme units was obviously a total education based development. No organizations of employers or employees were systematically involved (although, of course, there has been consultation on national level and cooperation on local level). The quality of the programme units is unbalanced, it has been stated that there has been too little guidance, outlines, etc. This raises the question whether teachers who are professionals in teaching can be at the same time curriculum-designers and discipline- or subject-specialists.

BBO and apprenticeship training

In the case of the apprenticeship system, the branch-specific national bodies are the central actors. In principle, the national bodies are responsible for the quality and assessment in respect to the on-the-job part. Also they are responsible for developing the curriculum documents (outline and attainment targets) for the courses (that must have the approval of the Ministry of Education and Science). Schools are responsible for the off-the-job part.

In modularising the apprenticeship based courses, the national bodies have broadened their influence. They coordinate the total process and they plan and set out the activities. They are also responsible for the development of the modules including the assessment instruments. Each national body has (created) a department for curricular development in which educational specialists and branch-specific professionals, who have expertise in the specific vocational or rather occupational area, work together. This department has actually developed the modules or coordinated their development because, in most cases, groups of teachers and supervisors were involved.

One of the education support institutions: the Centre for Innovation in Vocational Training for Industry (CIBB) has had much influence on the process of modularising apprenticeship based courses. The CIBB set up a method that started with detailed research of the occupational practice followed by clustering of the identified activities which finally were transformed into job profiles. These job profiles had to be the basis of reforming and modularising the branch-specific courses. Although not every national body asked this centre to carry out the research and method for them, most of the national bodies worked according to this method. The job profiles and the qualification structure, including the outline and attainment targets of the courses of the training system (eg. curriculum documents) which were based on the job profiles, had to have the approval of the social partners in the branch; this was an explicit part of the method. Also, the Ministry of Education and Science had to approve the curriculum documents (eg. the outline of courses and the attainment targets). After approval, curriculum documents and modules could be developed. As has been mentioned earlier, this is the task of the curriculum department of the national bodies in collaboration with (representatives/teachers of) BBO-colleges.

The actual modules are delivered in BBO-colleges and at the workplace (enterprises). Each institution (college and enterprise) is responsible for teaching, guiding and assessment of a part of a module (theoretical and practical learning are integrated).

MBO

With respect to the long (and integrated short) full-time courses within senior secondary vocational education (MBO) a new structure of responsibility for (the quality of) courses and curriculum reform has been developed. This process started in the mid-eighties when a reform of the MBO was thought necessary. In point of responsibility with respect to reform and quality of courses within the (new) MBO the MBO-structure resembles the structure of the apprenticeship system.

For the MBO especially, the involvement of industry and of the social partners is a new aspect. Until now, the attainment targets of the courses have just been established by the Ministry of Education and Science. Curriculum documents have been made, till now, by special commissions consisting of teachers and/or school managers and subject-specialists. The business community was incidentally consulted but there was no systematic involvement.

In 1987 (as one of the results of the advocated shared responsibility for vocational education in the early 'eighties) national branch consultative bodies for full-time vocational education have been set up. Also new for the MBO was the fact that the bodies were not organized according to the main distinction within the MBO (four main sectors) but according to occupational branch. Now, in 1992, there are 19 such bodies which consist of a well-balanced representation of all the institutions involved in vocational education (social partners, -denominational segregated-unions of teachers and -denominational segregated- organizations of school boards). The procedure is that the social partners deliver the job profiles and the national consultative bodies translate this into course profiles and attainment targets (which have to get the approval of the Ministry of Education and Science).

In most cases, the national consultative bodies also develop job profiles. The method used to design job profiles and educational (eg. course) profiles resembles somewhat the method used within the apprenticeship system. All education- or course profiles and attainment targets have to be completed by 1992. At this moment, not all of them are finished. As far as we can see now, many education- or course profiles are a revision of the old course outlines and attainment targets, some of them have been more radically changed than others. The process of implementing the revised education- or course profiles (eg. curriculum documents) will be starting after the summer of 1992. At that stage, modularisation might become one of the instruments used to translate the course profiles into a curriculum. There is no clear view on how this is going to be done and who will be involved (will it be a task of the individual schools or will a special framework with support from the education support institutions be created?)

Incidentally, the funding of the consultative bodies by the Ministry has stopped in 1991. The policy now is to integrate these bodies with the branch-specific national bodies within the apprenticeship system and reduce them to twelve to fifteen national bodies for stimulating reforms and quality control of full-time and part-time vocational education and training (to stimulate the integration within vocational education and stimulate merger between the different schools).

In 1989, The National Institute for Curricular Development and the CIBB presented a computerized system in which all results of the investigation of occupational practice (carried out in the context of apprenticeship training as well as MBO) and all job profiles have been stored. This system is developed as a support for curricular development and modularising courses. A user can ask all kind of questions about required competence for specific jobs or characteristics of occupational areas and use this as input for curriculum innovation and development. Every college or school can get attached to it. Every new piece of information about job profiles, etc. is added to information in the system.

From the above mentioned we can conclude that on the one hand, shared responsibility for vocational education and training which was advocated in the beginning of the 'eighties gradually gets its form. On the other hand, real commitment by industry (eg. social partners) for organizing and planning learning processes and concretize modules is not yet accomplished, especially in respect of full-time vocational education and training. With regard to full-time education, a gradual shift in responsibility from the central authorities to colleges has been noticeable during the 'eighties.

Chapter 3
Problems, consequences and implications of modularisation

In the Netherlands, there has not been much research regarding the implications and results of modularisation. In the case of MBO this is obvious because there are only a few experiments regarding modularisation; moreover, the process of modularising courses is just starting. Where KMBO is concerned research focused on problems ensuing from development and implementation of new courses and on the results obtained with the courses considering all possible aspects. Research regarding the modularising of apprenticeship based courses focused on the courses' design and on the implications for teachers and practical instructors. This research was limited to a few branch specific training systems. There has been no overall research done, till now.

In this chapter, we therefore focus on (the former) KMBO and the apprenticeship system but we, probably, have to leave some important questions about modularisation unanswered (especially regarding the figures).

3.1 Access and progression

KMBO

The KMBO-courses were developed to offer dropouts an educational provision (chapter 2). Therefore, no strict entry requirements were formulated. All students who had followed ten years of full-time education may enter the courses (either 'orienting and bridging' courses or more specific vocational training courses). This purpose of widening access (especially regarding the more specific vocational training courses) has not always been realized because of two important reasons. The first reason was that KMBO-pilot-projects required a certain minimum standard regarding intellectual capacities: students with severe learning disabilities were in most cases excluded from the KMBO-pilot-projects. The second reason was that for some specific vocational training courses the KMBO-pilot-projects still developed entry requirements after all, in order to be able to compete with the apprenticeship based courses. They wanted to reach the same level of competence as in the primary courses within the apprenticeship system. Entry requirements were not as formal as in other cases but were rather formulated in terms of 'being able to speak and understand Dutch' (for immigrants) or 'having a real interest in the course'.

Through research we got to know that in 1983, 63% of the KMBO-popu-

lation were students whose qualifications did not allow them to enter another course but KMBO (the so called 'gap-fallers'). In 1985, this overall figure raised to 85% (varying across the pilot-projects and the type of courses).

As has been mentioned before, there were/are two kind of courses within KMBO: 'orienting and bridging' courses and (18) vocational training courses. The purpose of the 'orienting and training' courses has been formulated as adjusting students' qualifications to entry requirements regarding courses and as a period to orient towards occupational areas and personal capacities. In 1985, 60% of all the students who completed their 'orienting and bridging' courses entered further (vocational) education.

The success rate of the (18) vocational training varies across the courses and pilot-projects. In 1982, 32% of the total KMBO-population on vocational courses dropped out; in 1985, the percentage was even 50%. Those who dropped out, did not complete their courses but, in most cases, they did have either one or more certificates (for programme units/modules). In 1985, 57% of the students that did not complete their course found a job, 23% entered another course and in the case of 20% further activities remained unknown; of those who did complete their courses successfully, 68% found a job, 27% entered another course and for 6% there was not any information concerning their further activities.

The apprenticeship system

One of the main objectives of modularisation within the apprenticeship system has been to improve the number of students who complete their courses successfully. Widening the access to the courses was at first no explicit objective of modularisation, at least not regarding the courses on primary level. Lately, this became more important (because of an increasing shortage of students and qualified practitioners) and, therefore, some national bodies experiment on crediting for prior learning and experience (for example with respect to older women who want to work (again)).

At this moment, we do not have total figures on the changes in the success rate of the modularised courses (because some of them have been modularised very recently, and because of the fact that not all courses, sometimes even within the same branch specific training system, have been modularised).

Assessment and certification

One of the major problems regarding access and progression is the implementation of changed assessment procedures and certification. Although in the case of KMBO, certification has been introduced at the first stage of implementing these courses, one still faces many difficulties.

Each project had its own method of assessment and standards, yet, national standards are lacking. Therefore, certificates for programme units have little value.

In the case of the apprenticeship system, national bodies providing examinations once or twice a year is still prevailing. This procedure is gradually changing into a non central and module based assessment- and certification system. In very few cases integrated school based- and workplace based assessment and certification have been realized.

Conclusions

During the eighties, both KMBO and apprenticeship based courses were responsible for widening access to vocational training. However, this is not entirely due to modularisation, designing modularised 'orienting and bridging courses' is a more important factor in this.

As progression within vocational training is concerned, assessment and certification are major problems. This is not accomplished yet. Important to notice is that every actor involved in vocational education and training agrees upon students completing at least a certain number of modules which offer them a minimum, nationally recognized standard of competencies. This minimum standard of competencies should enable students to practise a job independently. Modularisation seems to have improved the number of students who complete this minimum qualification (although, no exact figures are known).

3.2 The planning of training programmes

One of the major problems in designing and implementing modularised courses is the tension between the flexibility and the quality aspects of courses. By this we mean flexibility with respect to different aspects:

- flexibility of choice for students;
- flexible progression within the training courses (or lines of study) with respect to the (unpredictable) rhythm sustained by occupational practice (especially regarding training courses with on-the-job parts);
- flexible adjustment of the training courses to the (ever) changing occupational practice.

The quality aspects concerned are:

- the quality of learning and teaching: acquiring competence for a certain profession of job also means a type of structuring in the learning process, which may implicate that a certain sequence in subjects or learning goals is necessary;
- the quality of the learning goals (eg. level and kind of competen-

ce) regarding the training programme as a whole: they have to be related to the competence of the professional expert the course intends to qualify for, which may implicate that certain aspects of the training have to be compelling or can not be 'split up'; the quality of future prospects offered to students by the training programme: this quality is related to the extent to which the acquired qualification (and competencies) is recognized by the social partners and the national authorities; this quality is also related to the question whether the training programme is 'broad enough' (centred around core skills) in order to make students competent for jobs (instead of specific tasks) and for self-learning, further professional growth and development.

In the Netherlands, these aspects of tension between flexibility and quality are important issues and problems that have to be dealt with concerning modularisation. Courses as well within KMBO as within the apprenticeship system, are not as flexible as firstly intended (especially with respect to students' choices and adjustment to the rhythm of occupational practice). Modularisation in general, turned out to be an innovation within courses. To some extent, modules even got a fixed place in a course due to 'didactic' reasons and trying to avoid 'fragmentation' of courses or learning processes.

Possibilities for transition, during the course, from one branch-specific (system of) course(s) to another (branch-specific system) are few. There is not much cooperation on this between branches (especially within apprenticeship based courses). Social partners and national bodies are very eager to maintain their training provision (their 'face') within the education system.

Possibilities for transition during courses from one course to another within the same branch are more present (including credit for prior learning). However, these are (still) limited to transition within a specific type of vocational training (eg. within the long MBO-courses, within KMBO, within the apprenticeship system). With the future reforms concerning integration of BBO and K/MBO, this kind of transition during courses will be made possible. However, this imposes a major pressure on (colleges for) vocational education and training to reform courses and create transition possibilities and moments.

Designing modularised courses and the risk of fragmentation

In designing lines of study (clusters of modules) or modularising courses, the tension we mentioned existing between flexibility and quality has to be taken into account. In order to avoid fragmented training or learning processes one must bear in mind that developing professional compet-

ence relates both to what a competent professional does and how s/he does it. 'How' is concerned with the way in which workers/experts combine different activities and tasks, weigh up the merits of different options, and make adoptions in accordance with the demands of the specific situation.

In recent SCO-research we developed a number of criteria for (or we can even say identified problems in) designing modularised courses (or lines of study):

An important characteristic of a training course is the fact that it provides a specific route towards a specific ultimate goal (a particular profile of competencies). It involves a learning process which calls for the structuring of teaching methods. Learning processes and their educational design have a logic of their own. This can result in the need to make different choices in defining and delineating units. A direct translation of clusters of activities of practitioners in a field of work into teaching modules is thus neither possible nor desirable.

Within a training course, it is essential that a defined unit, or module, should always be part of a whole, or the curriculum. By having a special place within the curriculum, a module can contribute to more ambitious and broader goals for a training course. This brings the question of the organization of units/modules, and not only the division of the course into units, sharply into the forefront of the discussion.

There are a number of aspects which must be taken into account when vocational training courses are being 'split up' into modules, or modules are clustered together to make a training programme that should result in professional competence. These aspects can be translated into questions which have to be answered as part of the modularisation process, if the division of the course is to result in something more than simply fragmentation of the course.

The first question which is not on the list, but which first and foremost deserves an answer is: what should the profile of competencies achieved by students at completion of a course or a certain cluster of modules be? The answer to this question forms the criterion for weighing up the different answers to the questions which follow, and for making the final decisions between them:

1 Educational psychological considerations

As mentioned above, a training course is concerned with a learning process. It is important to give thought to the principles which underlie, or could underlie, a learning process training students to become professional practitioners with a particular profile of competencies. As a very general principle, it is best for a learning process to start with specifics,

move on to the abstract, and then go back to specifics.

For training courses operating within the apprenticeship system (but not only for these courses), it is important to start with the specifics: this approach allows giving shape to on-the-job training right from the start. Three paths which aim to develop students into (trainee) practitioners of a profession can be distinguished:

- Development from 'single' operations to 'integrative' operations: aimed at developing situational behaviour;
- Development from 'widely employable' to 'specifically employable': aimed at developing specialist applications of knowledge and skills;
- Development from 'general knowledge' to 'deeper understanding': aimed at the ability to analyze professional problems in depth.

We are making an analytical distinction here; all three approaches will frequently come together in the design of the training course or of the learning process.

2 (Professional) logical considerations

A vocational training course needs to have a relationship with the nature of the occupational practice, particularly where the training largely takes place within that field of practice. The dynamics of the field need to be reflected in the selection and organization of the modules. The following characteristics of the occupational practice are important in structuring the content of the course:

- The length of the production cycle: what rhythm is followed by the tasks which the fully-trained worker in the field must master? Can a daily or weekly cycle be distinguished, or does the cycle extend over a longer period?
- The sequence of the production process: is there an essential sequence to the tasks which must eventually result in the product?
- The breadth of the range of tasks: do all of the tasks which the fully-trained worker in the field must master occur in the (apprenticeship) company, or is there any specialization by companies?
- Extent of the risk of damage: to what extent are opportunities available for practice and experimentation where any errors which may be made will not lead to serious (personal or material) damage?

The most important criterion here is the recognizability of the choices made within the occupational practice: the search for a 'practical' selection and organization of modules.

3 Considerations related to teaching methods and strategies

A (formal) training programme is a managed, and hence structured, learning process. This brings up questions about design which lie in the area of teaching methods and strategies. One important issue is that of the instructional methods which are to be used, and another is the problem of the teaching format that should be used to help different groups of students to complete their courses successfully. A number of aspects relate directly to the selection and organization of modules: thought should be given to:

- Inclusion of 'out-of-date' subject material: material, particular knowledge or skills, can be out-of-date from the point of view of the professional field. It can however be important to include this material in the design of the training course or learning process, either because it covers an aspect where the student would be able to practice his or her skills particularly effectively, or because it helps to increase understanding of the development of the profession.
- Inclusion of 'supporting' material: this aspect particularly concerns the relationship between applications and the processes underlying them; in some cases it may be necessary to include particular supporting subject material in order to increase understanding or to improve application.
- Setting up practice situations: for the apprenticeship system or K/MBO these are partly fixed (school and company), which can sometimes impose limitations upon the ways in which modules can be arranged (for instance, lack of an unbroken period during which a particular operation can be mastered); conversely, training situations may be created which repeatedly call for the same organization/structure (trainee workshop, simulations).

4 Emancipatory considerations

Here we are concerned with a different order of considerations, based upon the idea that a training course is more than just a preparation for a job, and/or the idea that training courses can also have an innovative influence upon the occupational practice. Considerations of this kind can result in particular methods of working, but also in a particular selection or organization of modules. For example, the following views or starting point might have important consequences for course development:

- A training course should be development-oriented, meaning that it should aim to achieve 'full acceptance' of the course, in the sense that it offers its students tools enabling them to 'grow' and learn further. This argues in favour of paying attention to developing the students' capacity for learning.

- A training course should aim of achieving an innovative influence upon the professional field: this argues in favour of the inclusion of advanced or new ways of working, methods and techniques in the course, and, also, in favour of opening up to debate commonly used techniques and ways of working, and solutions to problems.

This approach is primarily concerned with providing criteria for testing the structure and content of the modularised training course, rather than making a statement about the (additional) parts which ought to be included.

With respect to apprenticeship based courses, the principles used for defining and organizing the courses are firmly founded upon the (professional) logical principles of the occupational practice. Educational psychological considerations play a secondary role, while other types of considerations are more implicit. As for the KMBO-courses, considerations related to teaching methods and strategy and emancipatory considerations play a larger role.

In most cases, as well with regard to KMBO as to apprenticeship based courses, modules have come to occupy a fixed place in the training course as a whole. Fragmentation of the courses as a result of the introduction of the modular system is not so much of a problem. This, however, does mean that the degree of internal flexibility is not always particularly large. As far as external flexibility is concerned (in the sense of the ability to react quickly to developments in the occupational practice), it should be pointed out that (essential) developments in the field, probably, call for more extensive modifications to the training course than just replacing or updating a module.

3.3 Pedagogy and the role of teachers and trainers

In both the apprenticeship based system and the KMBO, modularising the courses also meant considerable changes in planning and organizing the learning process and the implementation of new teaching methods and materials. As has been mentioned in section 2.4, new teaching materials were developed by the national bodies together with teachers and trainers (apprenticeship system) and by groups of project-teachers (KMBO). In this new teaching materials, all kind of different teaching methods have been worked out: project teaching, self study programmes for students and most of all the characteristics of 'a cyclical learning process' integrating theory and practice.

Teaching materials for a programme unit or module consist of study

programmes and exercises for school and workplace. Each module starts with planning a 'learning path' that has to be designed by trainers and students 'in negotiation'. Teachers (on different subjects) and trainers have to work together to realize this planning. Students have their own responsibility to work and learn according to this planned learning route. As for the whole of the course this way of planning is essentially the same, although in most cases school (eg. teachers) set out the outline (and of course the curriculum documents set the limits).

This cooperative planning and organizing of the (individual) learning process causes lots of difficulties. On the one hand, students and trainers are not used to it, on the other hand, the rhythm of school based learning and workplace based learning is different and matching is not always possible.

Teaching and guiding within modularised courses appear to be placing fresh demands upon the teachers and practical trainers involved. Former research on KMBO and SCO-research on modularised apprenticeship based courses came up with similar conclusions where teaching and guiding is concerned.

As far as teachers are concerned, changes are taking place in four areas:

- The organization of the learning process: keeping track of individuals' progress makes greater demands upon teachers, since students are no longer all working on the same module simultaneously, and can also be working on more than one module at a given time.
- Supervision of students: the emphasis here is primarily placed on individual student guiding and counselling.
- Support of the content: the parts of a training programme are no longer completed in sequence by all students together, and in offering support, therefore, teachers can not rely any more on their knowledge and competence regarding a specific subject but must continually keep their knowledge up to date about all aspects and all parts of the entire programme.
- Broadening individuals' experience: because most teachers consider it undesirable to design total individual learning paths, they see it as their new responsibility to ensure and create opportunities for broadening individuals' experience, for instance by project teaching and cooperative learning.

In the case of apprenticeship based courses, consultants (of the national bodies who must control the quality of tutoring, assessment and students' progression) also point to an increase in the administrative workload as a result of the introduction of the modular system. However, at the same time, they report that greater demands are being made upon

their contribution in the area of content. Since they form the main link between the school and the company, they must be fully up to date with the content of the modules and the structure of the (individual) programmes. Thus, they also have to keep making recommendations, and to keep careful watch over the breadth and quality of the training course.

As far as workplace based learning is concerned, the introduction of the modular system seems to have led to an increased pressure on this part of training courses, especially with respect to the apprenticeship based courses. This seems paradoxical, given that in the past it was always the practical component which was the most important measure of apprenticeship-based training courses, whereas the modular system is primarily an educational approach which was expected to strengthen the syllabus offered by the schools. However, as part of the process of modularisation, a special effort has been made to strengthen the relationship between the training which takes place in the BBO-colleges and in the apprenticeship companies, and to develop integrated programmes. In this way, the four-days-a-week spent in the apprenticeship company become an integral part of the training programme, and teaching is no longer solely the province of the schools. Also, in comparison with the non modularised courses, the training programmes seem to have been expanded: all the modules must be covered during the apprenticeship placement. This sets greater demands upon the practical instructor's teaching and guiding capacities. The increase in workload for the practical instructors is concentrated in four areas:

- Bearing responsibility for the planning and organization of the learning process on the workplace: planning an individual learning track asks for decisions concerning the sequence of taking up modules and the selection of working situations the student can best develop his/her competencies; because of this planning of individual learning tracks, practical instructors have to plan in advance and control progression and planning.
- Giving shape to the relationship between theory and practice: whereas theory and practice are integrated in a module, it is also up to the practical instructor to make connections between them; this also means practical instructors, as teachers, have to keep their knowledge up to date about all aspects and parts of the entire programme.
- Broadening individuals' experience: for practical instructors this implicates further developing the course's relationship with the field of work: expanding it, updating it.
- Evaluation and assessment: because assessment takes place for each module, practical instructors have to judge students' pro-

gression and acquired competence more explicit and more continuously than before modularisation was implemented.

Therefore, supplementary training and supervision for teachers and practical instructors is (still) very important.

3.4. The influence of different actors on modular programmes

Concerning the influence of different actors on modular programmes, we should bear in mind 'the freedom of education' which is typical for the Dutch education system (section 1.1).

As we mentioned in section 2.4, the influence of actors involved in vocational education and training varied across the type of courses. The development and implementation of KMBO-courses has been a rather education based reform. Organizations of employers and employees were not systematically involved. The 'operation' was carried out by the pilot project themselves with (financial) support from the Ministry and the education support structure. Chiefly teachers were the ones who set the standards and contents of the courses, although in the end the Ministry had to approve of the standards (attainment targets and outline of the courses).

As regarding the reformed and modularised apprenticeship based courses, the national bodies (governed by social partners and representatives of the educational world) set the standards for the courses (attainment targets and outline of the courses). These standards, also, had to have the approval of the Ministry. The content of the modules eg. of the modularised courses are highly influenced by educational specialists (from the educational department of the national bodies) in cooperation with trainers.

If modularisation is going to be implemented within the (re-structured) MBO, the relative influence of the different actors involved will resemble the 'model' of apprenticeship based courses. However, the influence of educational specialists and teachers will be greater because MBO is (still) a full-time type of education. If the trend of reforming courses into 'dual' courses will be pursued, the influence of educational specialists and teachers will be comparable to the influence they have with respect to apprenticeship based courses.

The influence of the method

In section 2.4 we already mentioned the method carried out by the Centre for Innovation in Vocational Training for Industry (CIBB) for modularising courses. This method is very compelling with respect to the

contents and standards of the modular courses. The method starts with an extensive study of the activities of practitioners in the field carrying out the job which students are being trained to perform.

Long lists of possible activities performed by people working in a particular occupational group were developed and presented to a large number of people working in the specific field in order to find out which activities were performed, and how important they were to that function/occupation. Statistical analyses and various additional research were used to produce documents known as job profiles.

It is important to note that these job profiles are based upon a breakdown of the activities performed by people working in the field. Clusters of activities are distinguished in the job profile. These are the units from the occupational practice to which the training programme is supposed to refer. The connecting link in the job profile (between the clusters of activities) is the fact that a particular functionary performs all these activities.

A problem is the fact that putting together these clusters of activities does not in itself yield a definition of the content of the whole thus produced (this also applies provisionally to the modularisation of training courses). In some respects, the profile in question is a task profile rather than a job profile (profile of necessary competencies): it is concerned with 'what' a person does rather than with 'how' s/he does it. This question of 'how' in fact characterizes the fully-trained professional, or 'expert'. In particular, 'how' is concerned with the way in which people combine different activities and tasks, weigh up the merits of different options, and make adaptations in accordance with the demands of the situation. This concerns a particular kind of competencies which are less concerning the level at which each separate task or activity must be carried out and more concerning the way in which tasks have to be combined, or which activity is required in which (professional/business) situation. This is the type of competence which draw up the profile of the professional in the field.

The risk of the method used by CIBB is that this type of competence (which is less 'visible') will disappear 'amongst the modules' because the method only focuses on the 'visible' activities (eg. tasks) of practitioners/-professionals. This risk is even more present if we regard the computerized system that has been developed as an instrument for designing modular courses and determining the standards and contents of modules (section 2.4.). In this system, the results of the detailed research of occupational practice are stored. By direct use of these results (without 'translation' to the rhythm and objectives of educational processes) the concrete 'visible' activities performed by practitioners in the field will directly influence the contents of modularised vocational courses.

Till now, this method has been used for apprenticeship based courses. National bodies used and 'translated' the outcomes of this kind of research of occupational practice in various extent. Some national bodies (for instance in the sphere of health care) have made extensive 'translation processes' taking into account the 'logic' and dynamics of learning processes, the characteristics of their client groups and so on. Others have made a more direct link between the contents of modules and the identified activities within occupational practice. There are examples of difficulties ensuing from this, for instance: installation engineering.

Within installation engineering, courses were first designed according to a strict sequence of 'complexity of operation'. Students had to start their course by taking up modules which were concerned with learning single operations before they were allowed to take up modules in which 'integrative' competence had to be learned. However, the characteristics of training places did not allow this kind of sequence because 'integrative operations or behaviour' have to be taught from the start. Also, students and teachers complained because of the artificial nature of this sequence. In the end, the national body decided to allow, within certain limits, free choice in taking up modules.

The method of CIBB (and the National Institute for Curriculum Development) is still prevailing. Many national advisory bodies for MBO (for revising the long and short full-time courses within MBO) have also used this method. Moreover, the computerized system is till now one of the major instruments schools can use in implementing (and designing) modular MBO-courses (see also section 3.6 for the problems concerning implementation strategy with regard to modular courses).

3.5 Attitudes and reactions to the modular reforms

There hardly has been any research carried out on attitudes and reactions of students, trainers and employers with respect to modularisation. This has partly to do with the fact that the modular reform is no major reform but rather scattered and spread over the different types of vocational education and training. From SCO-research and former research on KMBO we know something about attitudes.

As far as teachers are concerned, significant changes are taking place in their role because of modularisation. However, their opinions regarding these changes were different: some teachers complained about the devaluation of their competencies ("I might just as well leave the class to get on with it"), while other teachers said that they primarily saw a new challenge in the different approach which they had to take. The first

group pointed mainly at the reduction in demand set upon their knowledge of the subject, since the new curricula are very highly pre-structured. The second group said that for this very reason, greater demands would be made upon their knowledge of the subject: more use would be made of their ability to bring their subject up to date, to look for examples, to differentiate and to point out to connections.

Teachers state the administrative workload has severely increased because of modularisation (although, with respect to the apprenticeship system the national bodies control overall progression of students and therefore experience the most severe increase in the administrative workload). Also, teachers encounter difficulties in organizing assessment and certification. In many cases they complain about the fact that assessment and certification are not yet set free by the national bodies. Finally, teachers affirm that cooperation between teachers has increased because modular programmes have to be planned and carried out as a team. On the one hand, teachers find this cooperative working pleasant, on the other hand, they find it sometimes annoying, because they no longer have their own independency on deciding what and how to teach, they always have to consult other teachers and trainers (and students).

Trainers, practical instructors, in general, affirm that the modular system offers them more structure and support in guiding and training their students/apprentices. At the same time, practical instructors find it more difficult to train students within the modular system. They experience pedagogical competence has become more essential. Some practical instructors also claim that they have to be more careful to keep their professional competence up to date (because students want deeper understanding of professional problems or have to analyze them).

Practical instructors clearly express the need for more support and training with respect to their work of guiding and training students within the modular system (for example on assessment procedures, individual guiding, pedagogical competence). Many practical instructors claim they have too little facilities (eg. time) to train the students properly. Although this is a general complain because many practical instructors have none or only a few hours a week to guide a student/-apprentice, the modular courses seem to strengthen this complaint. Individual employers do not always give priority to training apprentices. Students seem to have major difficulties with the independency modular courses ask from them. They (still) have problems with planning and organizing their own learning process. They also report that the on-the-job and off-the-job part of the course (eg module) have not been sufficiently integrated yet and that these parts have been handled (trained and assessed) too independently of each other.

3.6 Implementation strategy

In the Netherlands, an implementation strategy for implementing modularisation within vocational education and training is non-existent. However, in 1988, the Ministry of Education and Science produced a policy paper on modularisation. It stated that modularisation had to be implemented in all types of senior secondary education (both general and vocational education and training). However, the current situation is that in general education (HAVO/VWO) as in MBO, only scattered experiments on modularisation have been carried out.

This situation of scattered projects in full-time general education and vocational education is highly due to the Dutch structure of responsibility and control of education, which is dominated by the distinction between private and public schools and the so-called 'freedom of education'. Because modularisation has to do with organizing and planning the learning process and with teaching methods, the Ministry can not force this innovation. It is up to the schools or colleges to decide whether they want to modularise their courses or not. However, even within the scope of its (limited) authority, the Ministry might have been stimulating the innovation on modularisation to a greater extent. For example, the Ministry could have used the education support institutions to provide a structure for implementation, consisting of developing good examples, organizing support and advice (as it did in the case of the development of KMBO-courses, in which a top-down and bottom-up innovation strategy was developed). Therefore, we have to conclude that modularisation is no major policy of the central authorities.

The consequences of this lack of pressure coming from the Ministry (either because they are unable to do so or because no priority is given to modularisation) can be felt within MBO as within the apprenticeship system/BBO.

Within the apprenticeship system national bodies have been the central actors in implementing modularisation. However, the authority of national bodies is limited with respect to the BBO-colleges. The support and special or additional training for teachers is a task of the education support institutions. In some cases, national bodies were able to organize support and training for teachers with regard to modularisation, in cooperation with the education support institutions. In other cases, they did not manage to do so. Because the (national) education support institutions had and still have hardly any project-funding regarding modularisation, their support and training for BBO-teachers was not as intensive as the national bodies wanted it to be. Also, it remained very general because the (national) education support institutions were not able to have a (deep) serious discussion about the various modules and

programmes set by the (31) national bodies.

Within MBO, the consequences of the lack of support are even more obvious. In section 2.2, we already mentioned that ten MBO-schools in 1980 started a project on 'learning by participation' (as was the central concept for the KMBO-courses). These ten schools were not offered much support. The Ministry of Education and Science was not willing to change the procedures on national examinations, which interfered with the flexible assessment for each programme unit. In the second half of the 'eighties, projects on modularisation were developed as initiatives of MBO-schools and educational organizations (including education support institutions). These initiatives, also, did not receive much support.

In the policy paper on modularisation issued in 1988, the Ministry declared for the first time that implementation of modularisation within MBO should be started. The national advisory bodies for MBO (section 2.4) have been developing an outline of courses and attainment targets which, also, could be used as a starting point for modularisation. However, the Ministry, again, did not set a structure for implementing these outlines and attainment targets. It seems MBO-colleges have to do this on their own with minimal support coming from the education support structure. This also seems a consequence of the new policy followed by the Ministry to give schools/colleges a greater independency with respect to all aspects of organization and development of educational provisions (including assessment procedures).

However, the risk for every college working independently could be a lack of adequate teaching materials, re-occurrence of failures and unshared successes of which others might be able to learn have they been working together.

Chapter 4: Criteria of effectiveness

Primarily, criteria of effectiveness of modularisation should relate to its initial goals. For KMBO these were:

- creating an educational provision for the 16-18 age group;
- creating vocational training courses which are nationally recognised by organizations of employers and employees and the national authorities;
- offering individual study paths that adjust to the needs of (different) groups of students or clients;
- offering a meaningful training course for youngsters which widens experience and competence by implementing a 'cyclical learning process of theory and practice'.

For the modular apprenticeship based courses initial goals were:

- a better attuning of courses to the competencies required by the (ever changing) occupational practice;
- a better tailoring of courses to the needs of individual students.

As far as the apprenticeship system is concerned, one believed these goals could be achieved by making the vocational training system more flexible. Modularisation was regarded as an important instrument in achieving this (internal and external) flexibility.

At present, with the coming reforms within senior secondary vocational education (MBO and BBO) we might aid another goal: Modularisation as an instrument for developing a coherent and flexible system of vocational education and training.

To evaluate the effectiveness of modularisation we are therefore able to make a distinction between 'internal' results and 'external' results.

Criteria of the 'internal results' might be:

- widening access: offering a vocational training course to a various client group, which leads to -at least- minimum competencies for practising a profession and which are, at national level, recognized by social partners.
- improvement of success-rate: increasing the number of clients/-students who successfully complete a cluster of modules (eg. a modularised course), which standards are nationally recognized by social partners.
- improvement of progression within modules and modularised vocational training courses (eg. lines of study).

Criteria of the 'external results' might be:

- improvement of the number of clients/students who find a job or enter further (vocational) education and training.
- improvement of the students' or clients' capacity for learning and of their capacity for adaption to changing or new situations (mobility within and across jobs; career development).

As far as the Netherlands are concerned, evaluation of effectiveness should also focus on the results with respect to the implementation of modularisation (eg. of its goals). This implicates investigation of:

- the format and quality of the outline and attainment targets of modules and of clusters of modules (eg. modularised courses);
- the format and quality of teaching methods;
- the format and quality of counselling methods;
- the type and quality of assessment procedures and certification;
- the competencies of teachers and trainers;
- the (quality of the) support for schools and enterprises and teachers and trainers;
- the possibilities for transition within the system of vocational education and training.

Chapter 5 Key issues

Key issues that might be interesting in the second year of the PETRA-partnership are:

- 1 The extent to which modularisation can be an instrument in creating a flexible and coherent system of vocational education and training that meet up to national standards of competence:
In deepening this issue, the tension between flexibility and quality as has been mentioned in section 3.2 might be of interest. Coherence should be regarded as a coherence between courses or lines of study both at the same level of qualification and at different levels of qualification. As far as the Netherlands are concerned, this implicates focusing on (the upper years of) LBO, BBO, K/MBO and, even, (further) training for (employed and unemployed) adults. Special attention should be paid to educational provisions for dropouts (the client group of the former KMBO). Also, the possibilities for gearing branch (or sector) specific courses should be taken into account. To what extent is integration of different branch (or sector) specific courses possible? For instance, technological changes within occupational practice seem to reduce the boundaries between sectors or branches.
If modules are to be an instrument in creating a flexible and coherent system of vocational education and training, how concrete should outlines for modules and certificates be formulated? How should national standards for competence be formulated and recognized throughout the vocational training system? How should prior learning be credited for? Different initiatives on this issue could be analyzed.

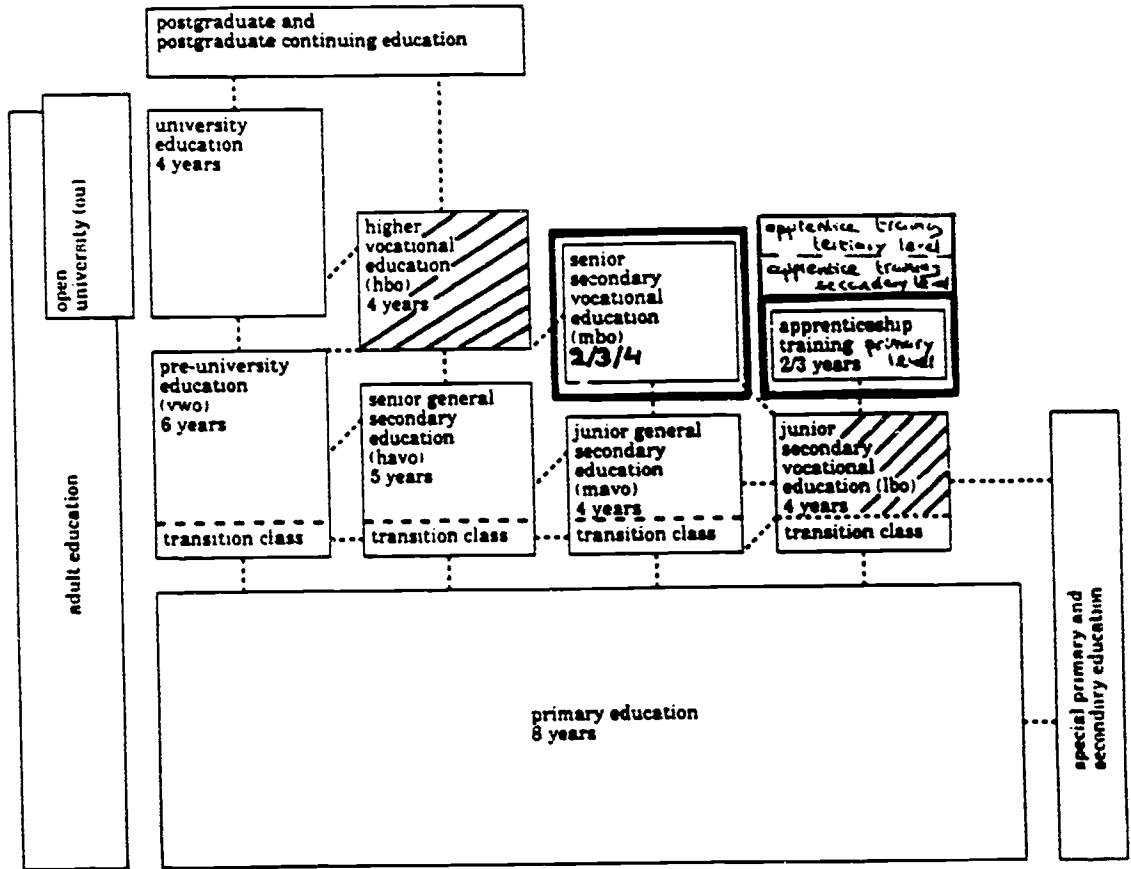
- 2 The quality of the -design of- modularised courses (eg. lines of study, clusters of modules):
It would be most interesting to compare modularised courses (lines of study, clusters of modules) in the different countries with respect to similar criteria and considerations as has been mentioned in section 3.2. This implicates a study of (a number of) modularised courses (lines of study, clusters of modules) on formulated learning outcomes (competencies) for a course/cluster as a whole, the way these courses/clusters have been 'split up' into modules (or gathered together) and -possibly- the advocated sequence of taking up modules.
The modularised courses/clusters of modules that are to be selected should show a variation of branches (for instance engi-

neering, health care and administration) and be more or less on the same level of qualification (EC standards; for instance level II or III). Comparison is best made if countries select roughly the same branches.

- 3 The planning and organization of learning processes and the format of teaching methods:
For instance consisting of: analyzing the extent to which modularisation resulted in changes in the planning and organization of learning processes and a changed format of the teaching methods; identifying these changes and comparing these between the different countries involved in the partnership.
In the country reports, these changes have been only roughly described (at least for the Netherlands). It would be interesting to analyze them in depth. Also, the implications for teachers and (practical) trainers might be deepened. Especially, integration of theory and practice might be studied and the contribution of practical trainers and instructors to modular learning processes.

DIAGRAM OF THE DUTCH EDUCATION SYSTEM

situation as of August 1991



Source: Netherlands, Ministry of Education and Science



main topic of this report



partially covered

1.4 Some figures

The population data in Table 1 provide an overview of the total numbers of pupils involved in the various forms of vocational education and the number of institutions they attend. As regards the LBO schools, these are to an increasing extent integrated within combined schools offering several different forms of LBO and/or AVO/VWO. A proportion of LBO/AVO/VWO combined schools have mixed LBO/AVO transition classes. The pupils in these transition classes are included in the statistics for AVO/VWO; this produces an artificial under-estimate of the number of LBO pupils. As of 1 August 1991 the number of HBO schools will be sharply reduced as a result of the SVM operation. The same thing happened earlier in HBO.

With regard to developments since 1970, the particularly significant point is the proportionate change in the figures for general and vocational education. This affects the relationship between AVO/VWO and LBO during the early years of secondary education. Selection in the transition class(es) results in many pupils abandoning AVO/VWO in favour of LBO; moreover pupils in joint LBO/AVO transition classes are included in the total for AVO/VWO. For this reason, the figures given in Table 2 are for the second (1970, 1975) and third academic year (1980, 1985, 1989). The main conclusion is that the proportion of pupils in LBO has declined. This development has not however been a gradual one. Sudden changes can be seen between 1970 and 1975, succeeded - at least for the boys - by a decade of stability; for the girls, participation in LBO continues its gradual decline over this period. After 1985 there is a further sudden fall, after which the difference in participation in LBO between boys and girls has become greater.

Table 3 shows the same picture in relation to participation by 15-year-olds in all forms of education. There is a marked difference between 1970 and 1975: the number of school-leavers and participation in second stage education are both reduced during this period to almost 0. Between 1975 and 1985 there is comparatively little change; thereafter there is a relative decline in the share of LBO.

Table 4 shows the distribution of pupil numbers over the different types of schools in the second stage of secondary and the first tier of higher education. Figures for 1975 are not complete, and are therefore not given. The particularly striking feature is the growth in participation in education by 18, 19 and 20-year-olds, especially after 1980. HBO and part-time vocational education (including the apprenticeship system) have gained particularly from this increasing participation. As regards male students, the percentage in HBO and university education has changed little in almost 20 years. For females, however, a sharp increase can be observed. In general, the pattern of male and female participation has become less unequal over this period.

In very general terms, it may be concluded that:

- * in the first stage of secondary education, great changes occurred in the 1970 - 1975 period. These can be seen in relation to the continuing effects of the social changes which occurred during the sixties, the introduction of the Secondary Education Act and the raising of the school-leaving age during this period. After 1985, there is a renewed increase in the pace of change, which can be related to the economic recession and the rapid decline in school rolls;
- * in the second stage, there is a tendency to continue longer in education, emerging particularly after 1980. This too can be seen as related to the economic recession. Girls still tend on average to leave school earlier than boys, but the difference has become less marked. Participation in HBO has increased in both relative and absolute terms (despite the declining population of young people). The differences in patterns of participation between boys and girls have been reduced.

Table 1

Population data

LBO	Total enrolled 1989/1990	m.	152,814
		f.	99,404
		tot.	252,218
Schools: LBO unisectoral			379
LBO multisectoral			127
LBO/AVO combined			116
other			214
total			836

MBO	Total enrolled 1989/1990	m.	159,882
		f.	134,550
		tot.	294,432
Schools: 1989/1991			438
1991/1992 *			145
* according to plan, an introduction SVM Act			
BBO/Apprenticeships			
Total enrolled BBO 1988/1989			147,998
with apprenticeship agreements			110,092

HBO	Total enrolled 1988/1989	m.	120,929
		f.	103,013
		tot.	223,942
full-time			168,925
part-time			55,071
Number of Institutes 1991			81

Table 2

Proportions l.b.o. - a.v.o./v.w.o., second/third year of course

	1970	1975	1980	1985	1989
M. s.v.o./v.w.o.	52.9	58.4	54.8	55.6	60.0
l.b.o.	47.1	41.6	45.2	44.4	40.0
F. s.v.o./v.w.o.	58.4	64.6	66.8	69.0	1.9
l.b.o.	41.6	35.4	33.2	31.0	28.2
tot. s.v.o./v.w.o.	55.5	61.4	60.6	62.1	65.7
l.b.o.	44.5	38.6	39.4	37.9	34.3
ABSOLUTE FIGURES:					
tot. s.v.o./v.w.o.	132,302	168,087	165,996	163,919	137,103
l.b.o.	106,226	105,687	108,032	100,189	71,433

1970, 1975: proportions for population in second year of course
 1980, 1985, 1989: proportions for population in third year of course

Table 3

Percentage participation, 15-years-olds

	1970		1975		1980		1987	
	m.	f.	m.	f.	m.	f.	m.	f.
(v.)s.o.	1,6	1,1	2,5	1,6	2,9	1,5	4,0	2,0
a.v.o./v.w.o.	44,8	46,8	52,6	58,2	52,9	62,9	57,1	68,6
l.b.o.	39,6	19,6	42,5	37,4	42,7	33,8	38,1	28,6
m.b.o. f.t.	0,9	5,3	0,1	0,2	0,2	0,1	0,2	0,2
m.b.o. p.t.	8,4	9,9	0,7	0,8	0,5	0,5	0,3	0,3
none	4,6	17,3	0,0	0,2	0,7	1,1	0,2	0,4

Table 4

Percentage participation by 17, 18, 19 and 20-year-olds

1970

	17		18		19		20	
	m.	f.	m.	f.	m.	f.	m.	f.
(v.)s.o.	0,6	0,5	0,5	0,4	-	-	-	-
a.v.o./v.w.o.	27,5	20,0	15,6	7,7	6,8	2,3	2,8	0,6
l.b.o.	13,2	2,0	6,8	0,9	4,3	0,5	2,9	0,3
m.b.o.-f.t.	9,2	9,1	10,0	5,5	7,8	3,1	4,7	1,4
m.b.o.-p.t.	20,3	6,3	18,2	4,7	12,5	3,1	5,5	3,2
h.b.o.	1,9	2,0	5,0	5,0	8,1	6,4	8,6	6,0
university	1,2	0,3	4,1	1,2	6,5	1,9	5,7	2,0
none	26,1	59,6	39,9	74,5	55,4	82,8	68,9	86,9

1980

	17		18		19		20	
	m.	f.	m.	f.	m.	f.	m.	f.
(v.)s.o.	1,4	0,9	1,2	0	-	-	-	-
a.v.o./v.w.o.	34,6	37,0	19,9	17,2	16,5	5,7	3,3	2,6
l.b.o.	17,4	7,9	5,4	1,8	1,2	0,4	0,5	0,2
m.b.o.-f.t.	15,9	19,7	17,8	15,0	14,6	7,6	9,5	3,0
m.b.o.-p.t.	12,8	7,9	13,3	5,5	9,7	4,2	6,7	3,3
h.b.o.	1,3	1,4	5,2	5,7	9,2	8,7	10,4	9,1
university	0,1	0,0	3,5	2,0	6,3	3,6	7,5	4,1
none	16,5	24,9	33,9	52,2	50,6	69,8	62,0	77,7

1987

	17		18		19		20	
	m.	f.	m.	f.	m.	f.	m.	f.
(v.)s.o.	2,4	1,3	2,1	1,4	-	-	-	-
a.v.o./v.w.o.	32,5	36,7	17,5	18,1	7,5	7,1	3,2	2,8
l.b.o.	16,5	8,3	4,9	1,9	1,2	0,5	0,4	0,2
m.b.o.-f.t.	26,7	30,1	30,8	30,0	25,0	19,5	16,0	9,3
m.b.o.-p.t.	12,3	7,2	13,8	6,3	11,5	5,3	9,6	4,3
h.b.o.	1,0	0,1	4,5	6,0	9,2	10,0	11,6	11,2
university	0,0	0,0	4,2	3,0	7,5	5,4	8,3	6,1
none	8,5	14,9	22,1	33,0	38,1	52,2	51,0	65,9

(v.)s.o.: special education

a.v.o./v.w.o., l.b.o., h.b.o., university: both full-time and part-time

m.b.o.-f.t.: full-time m.b.o.

m.b.o.-p.t.: part-time m.b.o., including day-release/apprenticeship schemes
and part-time non-formal education for young school-leavers

1975: figures for university attendance not available

(source: CBS, *Young people in the Netherlands and their education*)

I MODULATION

Module based training schemes are becoming increasingly popular. In various systems of education they are gaining ground with great rapidity, but what exactly is taking place in training courses whose programmes are being built on modules?

This note is concerned with 'modulation' in vocational training, and compiled according to concrete experiences gained in the process of modulating vocational training courses. The concept 'modulation' belongs to technical language used by people who develop programmes for vocational training. Modulation is an educational principle in the field of development of training courses and content according to a specific structure and system.

The concept modulation can be compared with structuring-methods such as project-education, theme-related education, etc. . However, modulation is not quite the same thing!

This note is intended for everybody who develops training programmes, such as designers of curricula, training schemes and programmes.

The following questions are being answered:

- What is modulation?
- What are the principles?
- What are the consequences?
- What are the advantages/disadvantages?
- Who does what?

and

- How does one design modular systems?

Modulation is not a new label for concepts and ideas which have existed for years already; modulations is a clear, practical, educationally tested solution to current bottlenecks in vocational training. Since 1982 the concept modulation has expanded steadily, which took place in a process of failures and successes.

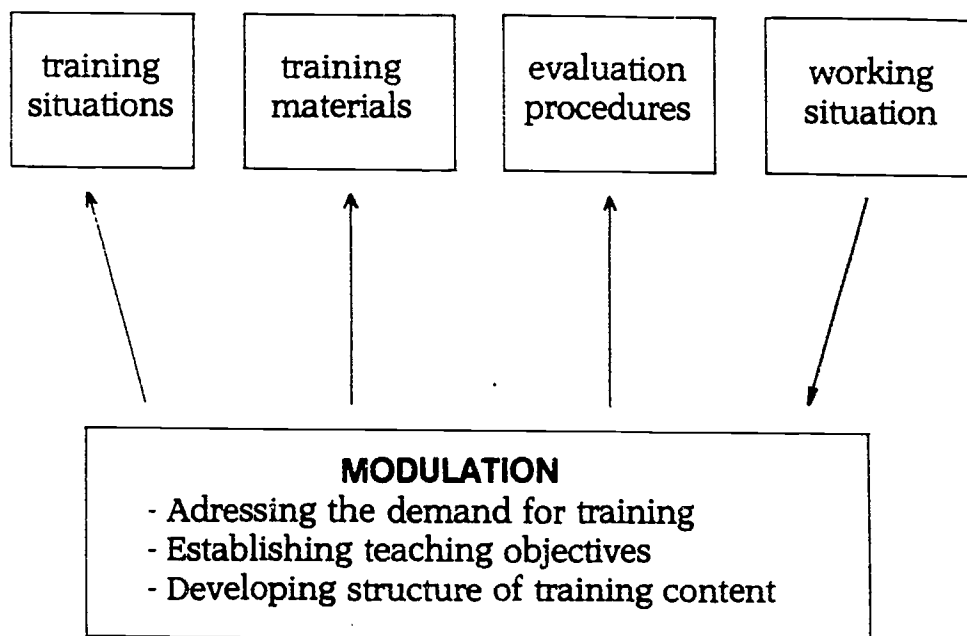
We can now state this process of learning by experience has resulted in a clearly workable and understandable structuring system, the modulation.

The essence of modulation

Modulation as programming language, as educational structuring principle knows the following starting points:

1. Modulation forges a direct link with professional practice, the working situation.
2. Modulation brings about the necessary relationship between (note) practice and theory.
3. Modulation clarifies an education system and makes it more understandable and 'flexible'.

Designing modular training systems is an activity at structuring-level of training programmes and has influence on all the aspects of the training.



The starting and finishing point of vocational training courses is the working situation. The output of the course is a qualified professional expert.

That is why the working situation, the tasks to be performed by the expert are the focus of attention in module based vocational training. On the basis of these elements the training content of the courses is developed. After the demand for training has been assessed, attention is given to the determination of the training objectives (final terms) and the structure of the training to be provided is established.

In the training structure

- the final terms, the standards of competence to be achieved (objectives) are established;
- the entry-level, what previous education, skills are required as initial situation of the pupil;
- the training content; what training content is dealt with, and to what standard of competence the pupil is trained are established for each module.

A module is therefore a clearly defined, interdisciplinary, occupation-related training unit.

In a modularized training course various kinds of modules are distinguished, namely:

- a. Introduction-modules, in which preparatory and exploratory activities are incorporated.
- b. Basis-modules, these cover the occupational skills that can be considered as essential bases for professions which belong to a specific group of professions.
- c. Modules of which the training content is aimed at the occupational skills of one specific profession. In this group various choices can be made as regards the adjustment of training to qualification requirements.
- d. Integration-modules, in which various occupational skills are combined into integrated task packages.

The modulation has implications for all the aspects of a vocational training, the principles are reflected in the training materials, the training situations and the evaluation procedures.

In the following section the modulation principles, their implications and advantages/disadvantages are described in detail.

II MODULATION IS

Devising modular training courses is above all developing a structure (at comprehensive training scheme level). On the basis of the working situation it is determined what skills, or skills in connection with them, are to be included in the training.

When modular schemes are devised the structure is developed in accordance with the above-mentioned principles. We discuss what the consequences, advantages and disadvantages, are connected with these principles.

II.1 The direct link with the job content.

Consequences:

- A1. A modular training course is based on practical tasks, the job content is the focal point of the modulation activities.
- A2. Modules are well defined components (learning units) centred round a task (group of tasks).
- A3. The smallest unit around which training contents can be devised is the job content (or tasks connected with it, especially for initial training).
- A4. A modular training course benefits from a structure which, as much as possible, runs parallel to the activities and tasks the pupil is expected to master and perform in the working situation.
- A5. If the training is not related to the working situation, i.e. to the qualification requirements on the job, it is not a module based system.

Advantages and disadvantages

- a. The working situation is similar to the training situation.
- b. The trainee is not obliged to push his imagination to extremes in translating the training situation into the working situation.
- c. Changes in the working situation immediately result in changes in the training courses.

II.2 The practical relevance of the theoretical knowledge.

Consequences:

- P/T1 Every module includes practical as well as theoretical training. A distinction is drawn here between practical and theoretical training. The theoretical training in the module covers the theoretical knowledge which is needed to perform the task on

the job. The theoretical training is developed after it has been established what occupational skills the trainee finally has to master. In a way the theoretical training has to answer the trainee's questions (the 'how' and 'what' questions).

- P/T2 Theoretical knowledge which is not essential for the performance of tasks is imparted in the school component. This is done as much as possible in coherence with the modules, for each profession an inventory is made of this theoretical knowledge, which is finally included in the training scheme for that profession whereby it is explicitly linked to the module.
- P/T3 A modular training scheme knows two steering-principles. The first, above-mentioned, steering with regard to the order of the training contents is the working situation. The second is the steering with regard to training techniques.

Advantages and disadvantages:

- g. A modular training course runs - as regards learning road - as much as possible parallel with activities and tasks the trainee is expected to master and perform in a working situation.
- h. In dual training courses modulation helps to promote the relationship between the courses in the work component and school component, particularly by highlighting the relationship between working situations and theoretical knowledge.
- i. There is no separate learning road schoolcomponent-workcomponent.
- j. Much of the dispensable theory is left out.

11.3 A modular training system is a more flexible training system.

Consequences:

- S1 The modular training structure knows various 'entry-possibilities', its training road is not sequentially defined. As regards the order of the training contents, it is not possible to change the order of the modules one has to go through at random. Certain learning units have to be worked through in succession.
- S2 A modular training course knows optional modules besides the modules (learning units) which have been made compulsory in the nationally established curriculum.
- S3 A modular training system is to take the uniqueness of the student into account. In principle, for every student it should be

ascertained what subjectmatter is required. Relevant points in this respect are:

- entry level/previous education
- entry moment
- difference in practical/working situation
- duration of the training
- etc.

Advantages and disadvantages

- k. A modular training system can be used for a broad vocational training and also for a limited task-training, the modules are also very appropriate learning units for re-training, additional training and re-adjustment courses.
- l. Optional modules offer the opportunity to pay special attention to the company in which the pupil is employed, to gear the training to the needs and wishes of the pupil and the company.
- m. A modular training system knows two steering principles. The first steering with regard to the order of the learning contents is the working situation. The second is the steering with regard to the training techniques to be used.
- n. The spreading of a vocational training over a longer period is possible (education permanente).
- o. On the basis of the modules, job content, it can be determined what kind of training can be devised for specialised companies (e.g. a rotation system).
- p. At regular intervals the training package has to be assessed and re-adjusted.
- q. Obsolete modules (qualification requirements) are to be cut out from the course and replaced by relevant new learning units.
- r. A detailed pupil-registration-system is necessary.

II.4 Modulation has many implications for the concrete training situations. (micro-level).

- M1 The job content is the smallest unit, and therefore the focal point, around which the training content can be developed. Theory and practice are combined into one unit.
- M2 A modular training course requires at least a differentiation within the group.
- M3 The teaching materials should be tailored to this differentiation, e.g. by means of self-steering teaching material.

- M4 A modular training system is not a system in which individual training is the only solution. The system knows a combination of various educational techniques, such as:
- individual activities
 - peer tutoring, which means a mutual learning process among pupils;
 - co-operative learning, group-activities aimed at problem solving activities and data processing (learning by asking each other questions);
 - instruction given by teachers, in case a larger number of pupils needs information.
- M5 There should be integrated assessments of knowledge throughout the module, which are to have a summative as well as a diagnostic aspect.

Advantages and disadvantages:

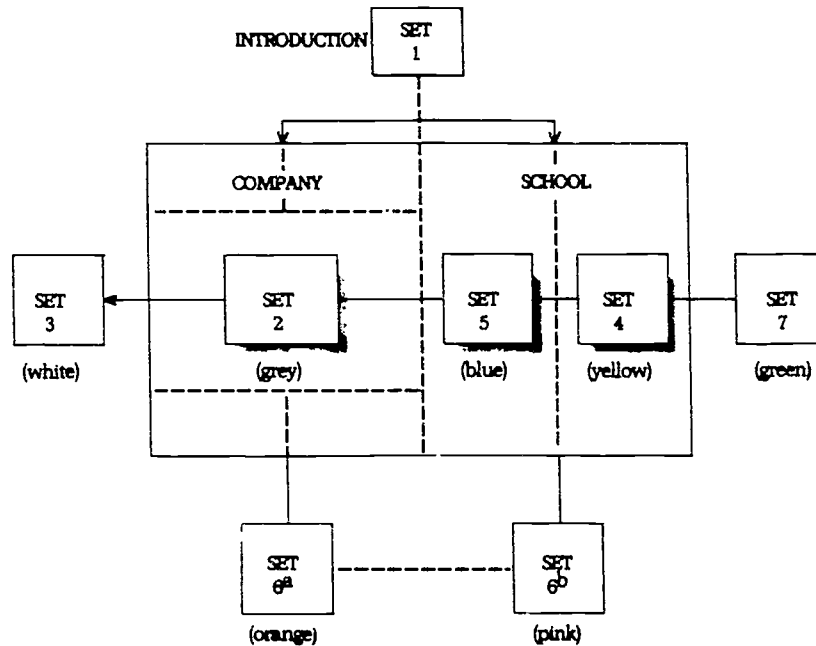
- s. A teacher has to possess a large range of educational talents.
- t. A modular training system should take the uniqueness of the pupil into account. In principle, it should be ascertained for every pupil what subject matter is needed.
Relevant points in this respect are:
 - entry level/previous education
 - entry moment
 - differences in practical/working situation
 - duration of the training
 - etc.
- u. Modular training systems can be used in vocational training courses which include the real work component. Vocational training courses in which the working situation is simulated are also suitable for modulation.
- v. Modules deal only with those tasks which require a structured training process (Is education the solution?)
- w. Modulation requires a relatively high degree of motivation on the part of the student.

The above-mentioned principles can lead to the development of teaching materials at micro-level as is summarised below.

Teaching materials

- set nr. 1: is the 'road sign' to the pupil.

Contains among other things the aims of the module, a table of contents of the sub-tasks in the module concerned, an explanation of the working method, etc.



- set nr. 2: comprise the engineering drawings, the step-by-step working order, the relevant practical instructions and surveys of the necessary materials and tools. At the end of set 2 a number of questions/assignments are added. The number of sets depends on the number of sub-tasks in a module.
- set nr. 3: are summaries of the sets 2 and are to be used at the workplace.
- set nr. 4: imparts the necessary theoretical knowledge of the trade. Questions are provided to assess the pupils' knowledge throughout and at the end of the training. In order to make the pupil's material more distinguishable, the different sets are produced on coloured paper. Throughout the training practical assignments to be performed are referred to.
- set nr. 5: contains a number of subject oriented practical assignments.
- set nr. 6: forms an integrated final test.
- set nr. 7: is the answers-book intended for the teacher and the trainer at the workplace.

DRAFT

Petra Research Programme
1991 - 1993

**THE EFFECTIVENESS OF NEW CURRICULAR MODELS
FOR INITIAL VOCATIONAL TRAINING:
MODULARISATION**

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April 1992

190

PETRA Research Partnership: Theme 8
Summary of Country Study on Scotland

CHAPTER 1: CONTEXT AND FOCUS

In Scotland full-time education is compulsory up to age 16; most is provided in public, comprehensive schools. At 16, young people may: continue at school for either one or two years; enter a full-time course at a further education college; enter Youth Training (a two year programme of integrated work experience and training); find a job or an apprenticeship; or become unemployed.

The curriculum in schools is pre-dominantly academic but there is considerable overlap between the academic and vocational curricula. The traditional academic qualification is the subject-based Higher grade but many students also take other qualifications including vocational National Certificate modules. Most courses in further education colleges provide vocational and occupationally specific training for semi-skilled and craft level jobs (non-advanced). Attendance can be full-time or part-time. Certification is mainly through National Certificate modules.

The Scottish Office Education Department (SOED) controls the system but local education authorities have considerable scope to determine organisational and curricula matters. The SOED shares responsibility with the Department of Employment of the UK government for vocational education and training.

The predominant concern of the British government over the last decade has been to raise the qualification and skill levels of 16-18 year olds by encouraging greater participation in education and training. Although participation has risen over the past decade, rates are still below government targets. In addition, the quality of some part-time training is questionable and participation at the 18 and 19 year old stage is particularly low in comparison with other industrialised countries.

The study focuses on non-advanced vocational education and training in Scotland; this was modularised in 1984 with the introduction of the National Certificate.

CHAPTER 2: CHARACTERISTICS AND OBJECTIVES OF MODULARISATION

2.1 The scope of reform

Over the period 1983-85, all existing non-advanced vocational courses for post-compulsory students were reformed. The reforms moved the curriculum away from knowledge-based courses determined by nationally set syllabuses to a system of modules based on statements of competences. Teaching and assessment methods were also changed. There are now 3,000 modules covering all occupational areas. Although modules are essentially vocational in nature, there are also general modules and they can be taken in schools by students following a mainly general education as well as by students in further education. Modules are accredited through the National Certificate (NC); the system is the responsibility of the Scottish Vocational Education Council (Scotvec).

Modules can be taken by young people in school or on full-time courses in further education, but also on a part-time basis by those in a job, on a government training scheme or who are unemployed. The NC provides a single, cohesive national framework for this diverse client group, offering a common basis for curricular planning and for integration and progression.

Initial vocational education is concentrated at the 16-18 stage in Scotland; in 1989/90 approximately 44% of all 16-18 year olds were registered for the NC.

2.2 Reasons, aims and objectives of modularisation

The NC was introduced because of low participation rates a lack of suitable non-academic courses in the upper stages of secondary school and of certificated provision for young people on Youth Training, and a confusing range of outdated and inflexible courses in further education colleges.

Aims and objectives included: more choice for individuals; increased participation through easier access and progression and because of improved motivation through the new teaching and assessment methods; higher skills levels among the workforce; a system more responsive to industry's needs; rationalisation of provision; the extension of national certification to more students; the encouragement of more student-centred approaches to learning; and assessment to prescribed national standards.

The NC is part of the debate since the mid 70s about the need to reform education and training to improve Britain's economic performance. Central themes in this debate are: the need to design training on the basis of nationally agreed standards of competence; the concept of 'core skills' common in a wide range of tasks and central to skill transfer; the desirability of a flexible modular form of delivery to improve participation and bring in new groups of students.

2.3 Definition and main characteristics of modularisation

NC modules are self-sufficient units of study that have a notional duration of 40 hours. Each module is defined in a 'module descriptor'. The learning outcomes which specify what is to be learned, assessed and certificated are the most important parts. The descriptor also includes performance criteria and recommends assessment procedures. Assessment is criterion-referenced, internally set and carried out on a continuous basis; modules are not graded. Participative, student-centred teaching and learning methods are suggested.

Single modules can be taken as free-standing units or combined in different ways to meet individual needs. In many cases students' programmes are largely determined by national agreements with employers groups but students in school can choose a few modules simply for interest. A National Certificate is awarded for even one module. Until 1990 Scotvec did not accredit a group of modules. Since then group awards of certain combinations of modules can be accredited. The most significant category of group awards are Scottish Vocational Qualifications (SVQs): nationally recognised qualifications for a particular occupational sector, made up of NC modules and other types of units. The move away from individual awards has continued with the development of General Scottish Vocational Qualifications (GSVQs). GSVQs, based mainly on NC modules, provide a broad foundation in a vocational area, and will be offered on a full-time basis in schools and colleges from September 1992. The introduction of SVQs and GSVQs is likely to have an impact on the design of students' programmes.

National standards are achieved through the learning outcomes specified for each module and through a process of validation and moderation carried out by Scotvec. This process is currently being changed to give institutions more responsibility for the standard of their provision.

2.4 Design and development of modules: roles and responsibilities

Scotvec's Sector Boards with representatives from industry, commerce and education are the

executive level for decisions about the curriculum; they work through Development Groups which manage Writing Groups which produce new or revised modules. The Writing Groups generally include members from industry, college and/or school staff and a Scotvec officer. Initially difficulties were found in expressing learning outcomes in competence terms but with training and experience Writing Groups have become more expert in how to write modules. Provision is regularly reviewed (300 modules each year); centres offering modules can submit comments to Scotvec which also actively seeks reaction.

With the introduction of SVQs, industry now has the responsibility for setting standards of competence so that where NC modules are being re-written to meet SVQ requirements, Scotvec must base their revision on these standards. Although industry has been involved in the development of NC modules from the outset, until the introduction of SVQs, the process had been education-led.

The module descriptor is only a skeleton, the centres offering modules must develop learning, teaching and assessment materials. This might be done by individual lecturers or teachers or on a group basis within colleges; by education authorities or by national agencies.

Local authority colleges and school are responsible for the bulk of NC provision. The extent of workplace delivery of NC has been limited but is likely to grow because of SVQs which stress assessment in workplace conditions. Initially the provision of modules in school was expected to be limited but it has grown dramatically (in 1989, school students made up 40% of NC candidates). Although the NC has enriched the school curriculum and weakened academic and vocational boundaries, there are problems about the low status of modules in school and the poor success rate of certain students.

2.5 Other relevant features: the Scottish context

It has been argued that a desire to preserve Scotland's separate education and training system was one of the implicit objectives of the introduction of the NC. The more centralised nature of the Scottish system also meant the NC could be implemented rapidly. But Scotland has not been immune from developments in England and Wales. The introduction of SVQs has largely been brought about by the need to keep in line with developments in England and Wales.

CHAPTER 3: PROBLEMS, CONSEQUENCES AND IMPLICATIONS OF MODULARISATION

3.1 Access and progression

The wide variety of students taking NC modules indicates some success in improving access. But access is limited by *external* factors such as employers' willingness to train their young workers.

It is possible to move within the NC system while changing statuses. In CES research we found that in 1989 more than a third of 19 year olds who had taken modules had studied modules in more than one status. We identified four main progression routes: school and full-time further education; school and Youth Training; school and employment; and Youth Training and employment. Our ~~research~~ revealed a high level of curriculum continuity between school and post-school modules. However we also found that a high proportion of students duplicated modules taken at school in a later status. The need both to structure modular provision in school and establish clearer routes of progression has been recognised and several projects are tackling this issue. We found a sharp fall off in participation and

hence progression in the NC after the age of 18 especially among young women. It is at the 18-19 stage, rather than the 16-17 stage, that British participation rates are lowest by international standards but in Britain, priority in training matters is given to 16 and 17 year olds. A flexible and open modular system alone is not enough to overcome the social, economic and labour market factors that control access to, and progression within, vocational education and training. The institutional context needs to be changed if modularisation is to realise its potential.

In our research we also examined progression *outwith* the NC system. We found major differences in the destinations of NC students depending on the status in which they had taken their modules and the subjects they had studied. In general there was a reasonably strong match between subjects students had studied and their occupation or industry of employment. The reluctance of higher education and especially the universities to recognise NC modules has been a continuing problem although recently they have taken a more positive approach. NC students who did go on to higher education were most likely to go into full-time non-degree courses and few entered university. Scotvec has almost finished modularising its advanced courses which will enable smoother progression from the NC into this sector of higher education.

3.2 The planning of training programmes

Flexibility and choice for both students and employers are key concepts in the NC although it is questionable whether these aims are compatible. Flexibility and choice for students depend partly on the availability of guidance. The NC has led to more systematic guidance provision in further education; most students now receive some guidance although the extent and quality varies across colleges. Schools already had a well-established guidance system before the NC and students' choices are not determined by employers' requirements although they are more likely to be restricted by the limited range of modules available in school and their secondary position in the school timetable. In further education, typically, 70-85% of modular programmes are fixed with the rest as elective elements. But students' choice of elective modules can vary from three to 100. A particular problem in modular programmes in further education is repetition of previous education and training, including repetition of NC modules already completed in school.

In general, the extent of choice and differentiated individual training programmes has been limited by institutional and organisational factors (timetabling problems, staff costs, etc); the demands of employers and industry bodies leading to the use of standard packages of modules; and the limited development of flexible learning systems. Although examples of flexible learning and innovative timetabling confirm the NC's potential for flexibility, the trend is moving away from student choice with the shift towards recognition of group awards of modules. The pressure from some industrial groups to devise mandatory sets of modules raises the question whether, in practice, flexibility is really valued by most employers.

The issue of 'whole programme' design is a continuing difficulty, some of the benefits of the NC relate to the availability of modules as free-standing units but the division of the curriculum into modules may lead to the fragmentation of learning. An SOED evaluation of the NC found that too often the module rather than the programme was the major focus of attention. The delivery of core skills was particularly affected by staff's focus on individual modules. They recommend the integrated delivery of modules.

3.3 Pedagogy and relations between students and teachers

The SOED evaluation concluded that in further education colleges there had been a major shift from traditional to more practical, activity-based learning approaches under the NC although they found variation across colleges and, in particular, differences depending on

subject area. The greatest single negative influence on learning and teaching was the way staff interpreted assessment requirements. In some subjects the main approach was to teach and test each learning outcome discretely, leading to a fragmented learning experience. Nevertheless, the NC had led to the use of a broader range of assessment instruments and coverage of more aspects of student achievement than had the previous system.

The NC has changed professional practice in relation to the planning of teaching and especially in relation to assessment. Before the NC, examinations were set and assessed externally, now lecturers and teachers devise and carry out assessments.

Although the NC reforms implied the need for extensive staff development, it had to be implemented within existing resources. This has had a negative effect on staff development although colleges have generally adopted a more systematic approach since the introduction of the NC. The large uptake of modules in secondary schools has had little impact on initial training courses for teachers.

3.4 The influence of different actors on modular programmes

While the modular system may have allowed students more flexibility in their programmes, it has not increased their influence. The principal actors are still staff in colleges and schools and employers. Until recently industry exerted more influence on the construction of programmes than on individual modules. Such influence was not new. The NC has not itself radically changed the relative influence of education and industry on the vocational education and training. The recent changes result from deliberate government policy to give industry the central role in determining the content and standards of vocational training via SVQs.

3.5 Attitudes and reactions to the modular reforms

Research indicates that, in general students have responded positively to the active student-centred learning of the NC and to its assessment procedures although students in school were inclined to question the status and value of modules compared with the main academic certification. Market research for Scotvec found a low level of awareness among employers about the NC. Other research with employers who used the NC found that they were generally positive about it. They thought it had improved the relationship between theory and practice and provided better assessment of students; there was some demand for graded assessment.

Both students and employers were more positive about the NC than lecturers in colleges (there has been little research on the attitudes of school teachers). But there were differences in lecturers' attitudes depending on their subject area and also between staff in different colleges. It seems that staff's responses are determined as much by the managerial and training support they receive as by the modular reforms themselves. Some of the lecturers' criticisms of the NC were also misconceived, based on a misunderstanding of the system. In general staff welcomed the changes the NC had brought about in teaching and learning. Researchers found that lecturers accepted the principle of criterion-referenced assessment - a shift from earlier attitudes - and identified advantages to continuous assessment. Nevertheless, lecturers were critical of the NC assessment model because of excessive paperwork; perceived negative effects on student learning; lack of grading; concern about quality assurance and national standards. But, under the NC, lecturers are much more directly involved in assessment and therefore more aware of its imperfections than under the previous system. They have also had insufficient training in this area. The SCED evaluation concluded that the low self-confidence of some staff about assessment was not well-founded.

Overall, while employers and students were more positive than lecturers, all three groups believed that the NC had resulted in a significant improvement on the system it replaced.

3.6 Other consequences, implications and problems

The NC has meant that institutions have needed to develop responsive student record-keeping systems to keep track of students' progress through their modular programmes. The NC has also led to the development of a computerised guidance information system for users.

CHAPTER 4: CRITERIA OF EFFECTIVENESS

A starting point is the original aims and objectives of the modular reforms and the extent to which they have been achieved. It might be helpful to categorise these aims on the basis of the extent to which their achievement is subject to external factors or within the control of the 'actors' in the NC system. The compatibility of the various aims should also be considered. Additional criteria that could be used include: equal opportunities; the impact on staff; and the impact on institutions.

CHAPTER 5: KEY ISSUES

Key issues include: whether most employers value the potential of modular systems for constructing flexible training programmes; whether student choice is a realistic aim; the limits of participation and progression in the NC and the influence of external factors on both; the provision of modules in school and the consequences of this for the status of the NC and of vocational education and training; staff development; programme design; and the likely impact of the introduction of SVQs and the shift in influence from education to industry.

C. HOWIESON,

Figure 1
The structure of Scottish education and training

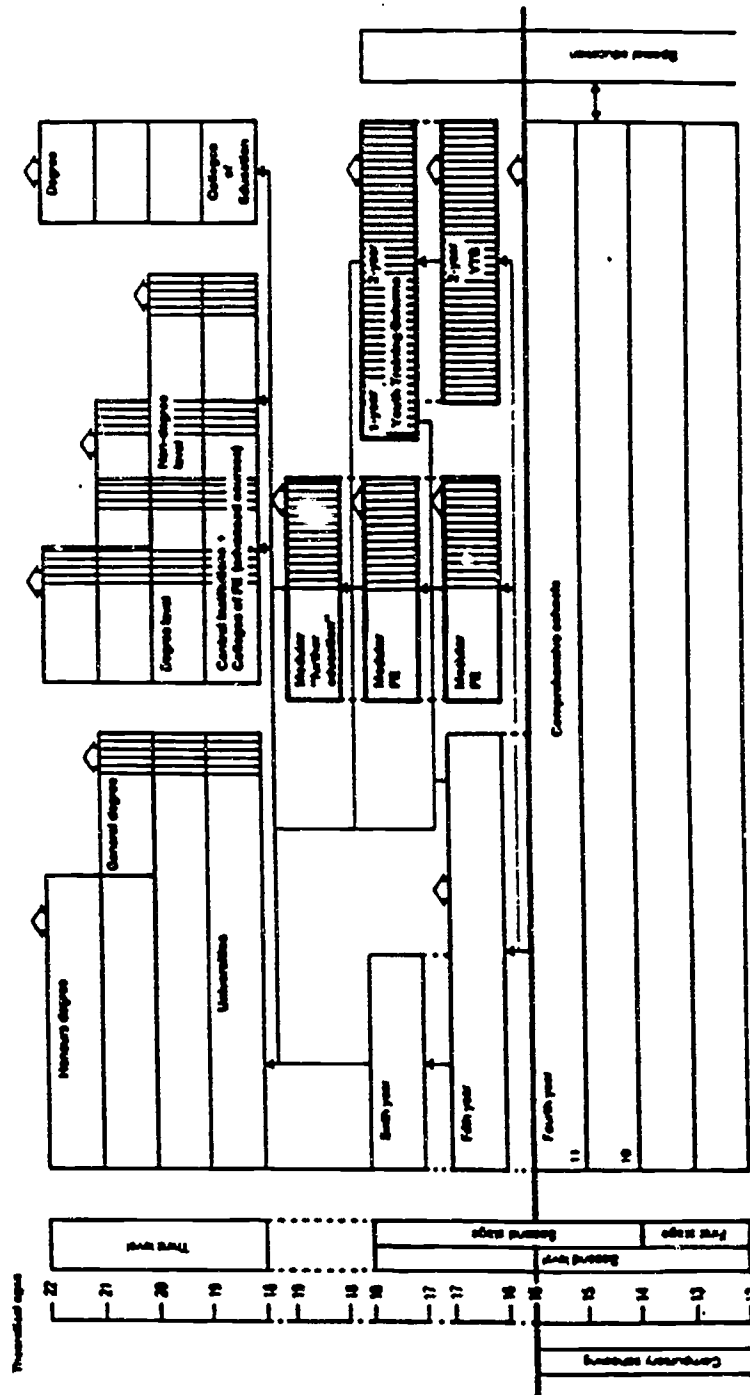
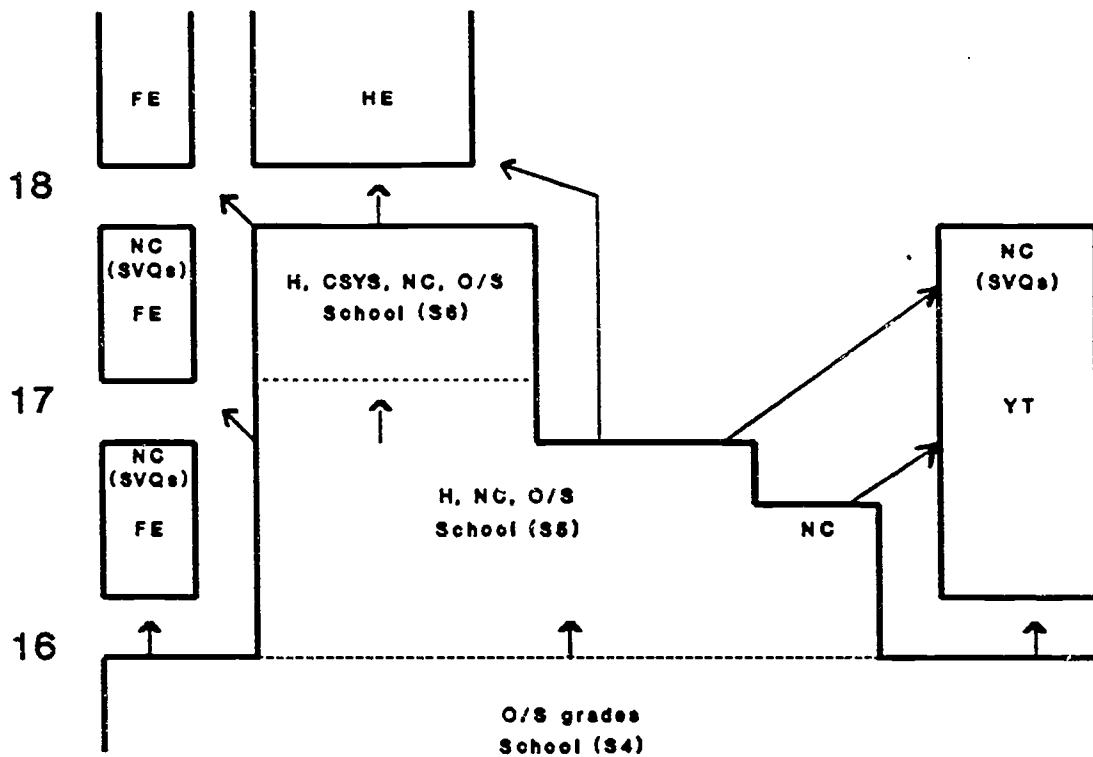


Figure 2

Scottish academic and vocational qualifications [ages 16-18]



Key to qualifications

H	Higher grade (SEB)	} academic
O/S	Ordinary or Standard grade (SEB)	
CSYS	Certificate of Sixth Year Studies (SEB)	
NC	National Certificate (modules) (Scotvec)	} vocational
SVQ	Scottish Vocational Qualification (mainly Scotvec)	

Appendix 1

INDEX TO THE SCOTVEC CATALOGUE OF MODULES

INDEX TO CATALOGUE

A BUSINESS AND MANAGEMENT

- A2 Small/New Businesses
- A3 Management Skills Systems and Techniques
- A4 Human Resources Management
- A5 Financial Management and Accounting
- A6 Marketing Sales and Distribution
- A7 Information and Library Management
- A8 Office and Secretarial Skills
- A9 Public Administration

B LAW POLITICS AND ECONOMICS

- B1 Politics
- B2 Economics
- B3 Law

C ARTS CRAFTS AND HOBBIES

- C1 Fine and Graphic Arts
- C2 Design (Non-Industrial)
- C3 Crafts (General) Collecting and Antiques
- C5 Woodwork and Basketry Crafts
- C7 Glass Ceramics and Stone Crafts
- C8 Fabric Crafts

D CULTURE SOCIETY AND EDUCATION

- D1 Social and Cultural Studies
- D2 Literature
- D5 Religious Studies
- D7 Social and Welfare Work
- D8 Education and Training

E LANGUAGE COMMUNICATION AND SELF HELP

- E2 Career Change
- E3 Self Help and Personal Development
- E4 Communication For And With Disabled People
- E5 Languages and Language Studies
- E6 Communication and Mass Media
- E7 Audio and Visual Media
- E8 Print and Publishing

F MUSIC AND PERFORMING ARTS

- F1 Dance
- F2 Theatre and Dramatic Arts
- F4 Theatre Production
- F5 Music History and Theory
- F9 Music Performance

- G1 Sports Studies and Combined Sports
- G3 Water Sports
- G4 Athletics Gymnastics and Combat Sports
- G6 Winter Sports
- G7 Ball and Related Games
- G8 Country and Animal Sports
- G9 Indoor Games

H FOOD CATERING LEISURE TOURISM

- H1 Hotel and Commercial Catering
- H2 Cooking and Food and Drink Preparation
- H3 Home Economics
- H5 Food Manufacture and Distribution
- H6 Tourism Leisure and Arts Management

J ENVIRONMENT SECURITY HEALTH AND SAFETY

- J2 Public Health and Safety
- J3 Cleansing
- J4 Security

K AGRICULTURE HORTICULTURE AND ANIMAL CARE

- K1 Agricultural and Horticultural Studies (General)
- K2 Agricultural Sciences
- K3 Crop Production
- K4 Gardening Floristry and Amenity Horticulture
- K5 Forestry
- K6 Animal Husbandry
- K7 Agricultural Engineering and Farm Machinery
- K8 Agricultural and Horticultural Management and Maintenance

L SCIENCES AND MATHEMATICS

- L1 Science and Technology (General)
- L2 Physics
- L3 Chemistry
- L4 Mathematics
- L7 Surveying and Cartography
- L8 Life Sciences

M HEALTH AND PERSONAL CARE

- M1 Health (General) and Health Administration
- M3 Medical Technology and Pharmacology
- M4 Dental Ophthalmic and Audiology Services
- M6 Nursing
- M8 Personal Care Services
- M9 Personal Health Care and Fitness

N ARCHITECTURE AND CONSTRUCTION

- N1 Architecture**
- N2 Planning**
- N3 Building Construction Studies: General**
- N4 Construction and Property Management**
- N5 Building and Construction Operations**
- N6 Wood and Woodworking**
- N7 Construction Site Practice**
- N8 Civil Engineering**
- N9 Structural Engineering**

P COMPUTERS ELECTRICAL AND ELECTRONIC ENGINEERING

- P1 Electrical Engineering**
- P2 Electronic Engineering**
- P3 Control Engineering**
- P4 Computer Systems and Software Engineering**
- P5 Information Technology/Computer Applications**

R ENGINEERING PRODUCTION AND INDUSTRIAL DESIGN

- R2 Engineering Systems and Services**
- R3 Production Management/Quality and Reliability**
- R4 Industrial Design**
- R5 Engineering and Plant Safety**
- R6 Production Process Work**
- R7 Testing Measurement and Precision Engineering**
- R8 Mechanical Engineering**

S MINERALS MATERIALS AND FABRICS

- S1 Mining Oil and Minerals Technology**
- S2 Materials Engineering and Technology**
- S4 Textiles Fashion and Furnishings**
- S6 Furniture Manufacture**
- S7 Paper and Board**

T TRANSPORT SERVICES AND VEHICLE ENGINEERING

- T2 Aviation**
- T3 Marine and Waterway Transport**
- T8 Vehicle Maintenance and Repair**
- T9 Vehicle Manufacture and Sales**

Appendix 2

**STRUCTURE OF A NATIONAL CERTIFICATE
MODULE DESCRIPTOR**

STRUCTURE OF MODULE DESCRIPTORS

Module Descriptors have been designed as Curricular Frameworks consisting of eight sections:-

REFERENCE NUMBER and DATE	to ensure that the correct module descriptor is being used.
TITLE	to give a clear idea of what the module is about.
PURPOSE	to give a clear guide of the general changes in the learner which are to be brought about. An explanation is given of the uses for which the module was designed and the ways in which it can best be used and any limitations on its use or recognition.
PREFERRED ENTRY LEVEL	to show the level of previous achievement without which it is likely that a student will have difficulty in successfully completing the module.
LEARNING OUTCOMES	to specify clearly the key competences which are to be accredited. These cannot be changed.
CONTENT/CONTEXT	to give an indication to tutors of the range of contexts within which a module could be offered and the subject matter which would assist in the achievement of the Learning Outcomes.
LEARNING AND TEACHING APPROACHES	to suggest learning strategies which enable the Learning Outcomes to be achieved in as student-centred, participative and practical a way as possible.
ASSESSMENT PROCEDURES	to suggest the most appropriate way in which the Learning Outcomes can be assessed and to specify the required standards of student performance. Recommended Assessment Procedures may not be altered without the prior approval of the Council.

Appendix 3

**EXAMPLE OF A NATIONAL CERTIFICATE
MODULE DESCRIPTOR**

SCOTTISH VOCATIONAL EDUCATION COUNCIL

Hanover House
24 Douglas Street
GLASGOW G2 7NQ

NATIONAL CERTIFICATE MODULE DESCRIPTOR

Ref No	90016	Session 1989-90
Title	LAND NAVIGATION USING TOPOGRAPHIC MAPS (x 1/2)	
Purpose	This module has been designed for those who regularly have to plan and follow complex routes using topographic maps. This may be as part of their leisure activities or as part of their work.	
Preferred Entry Level	A competence in map reading such as is demanded by 90015 Map Reading.	
Learning Outcomes	The student should: <ol style="list-style-type: none">1. plan a complex route using a topographic map;2. follow a complex route using a topographic map;3. navigate on land using a topographic map and a compass.	
Content/ Context	Students should work with topographic maps from the Ordnance Survey, or maps of similar complexity. Maps and plans involving a variety of scales should be used. Fieldwork should involve a variety of terrain and include work in built up areas. <u>Corresponding to the Learning Outcomes 1-3:</u> <ol style="list-style-type: none">1. Determine start and finish points of routes to be followed using a map and compass; draw feasible route plans; describe significant features of the route; tabulate lengths and, where relevant, bearings of the various legs of the routes; estimate the time required to traverse routes.2. The student should develop skills which enable him or her to follow routes which	

cannot be navigated by line of sight. Ideally the routes followed should be planned by the student.

3. The student should practice transferring bearings from compass to map and map to compass. The effect of magnetic variation must be allowed for in this. Skill in following bearings set on the compass should be developed. Pacing, use of pedometers and other methods of approximating distances may be used to assist.

Suggested
Learning and
Teaching
Approaches

A practical approach involving fieldwork should be adopted throughout. Students should be supplied with field equipment (maps, compasses, and notebooks) of appropriate size and layout for convenient fieldwork. Group work should be encouraged at all stages, though assessment must be of individual skills.

Graded exercises should be designed so that the student encounters terrain and key features of increasing complexity as the learning progresses. Care should be taken to ensure that a wide variety of terrain and maps are used. Fieldwork should involve expeditions in built up areas, open ground, and heavily contoured terrain.

As students acquire confidence in map interpretation, compass use and route following, route planning exercises should be incorporated into the field tasks.

A variety of approaches should be used in order both to increase student motivation and to bring out the potential value of land navigation skills in vocational and recreational activities. Exercises involving boundaries, tracks, and complex topography such as streams, cliffs, and ridges should be undertaken to make the student aware of the importance of these features in land navigation. Treasure hunts, orienteering and timed competitions under close supervision would develop the recreational aspects.

Assessment
Procedures

Acceptable performance in the module will be satisfactory achievement of all the performance criteria specified for each Learning Outcome.

The following abbreviations are used below:

LO Learning Outcome
IA Instrument of Assessment
PC Performance Criteria

L01

PLAN A COMPLEX ROUTE USING A TOPOGRAPHIC MAP

- PC (a) The identification of start and finish points is accurate.
(b) The route identified is feasible in terms of terrain, time available and the student's fitness.
(c) The navigational demands made by the identified route are varied.
(d) The identification of significant landmarks and obstacles is complete.
(e) The estimation of time required to complete the route is reasonable.

IA Assignment

An assignment should be set which requires the student to plan and describe a route over unfamiliar territory which enables criteria (a-e) to be met. Using a map and instruments the student will be required to:

- (i) give 6 figure grid references for the start and finish points;
(ii) draw a feasible route plan involving a minimum of two changes of direction;
(iii) identify the landmarks and obstructions and describe how they will assist and hinder navigation;
(iv) determine the length of the route, and estimate the time required to complete it. Distances should be accurate to 1 part in 10 (10%) and time should be within 1 part in 10 (10%) of an expert estimate. This estimate should take the purpose of the journey into account.

Satisfactory performance will be demonstrated by the student achieving all the performance criteria.

L02

FOLLOW A COMPLEX ROUTE USING A TOPOGRAPHIC MAP

- PC (a) Full completion of the route is achieved.
(b) The completion time is reasonable in relation to the planned time.
(c) The navigational skills required by the route are fully met.

IA Practical Exercise

A practical exercise will be set in which the student will follow a complex route. The route must:

- (i) start and finish at points identified by 6 figure grid references;
- (ii) involve a minimum of two changes of direction;
- (iii) be feasible in terms of terrain, time available and student's fitness.

The ends of each leg of the route could be marked with a sign which the student is required to note or collect, or monitored by an observer who can certify arrival at the end of the leg. The observer must play no part in the navigation. Allowance should be made for detours and delays brought about by unforeseen circumstances.

Satisfactory performance for this outcome will be demonstrated by the student achieving all the performance criteria.

L03

NAVIGATE ON LAND USING A TOPOGRAPHIC MAP AND A COMPASS

- PC
- (a) The identification of own position using map and compass is accurate.
 - (b) The taking of bearings is accurate.
 - (c) The following of a compass bearing is accurate.

IA Practical Exercise

The student should provide evidence that he or she can meet the performance criteria for this outcome in the course of fieldwork. The student must perform the tasks without the assistance of other people. Calculation aids may be used.

In the course of the fieldwork:

- (i) Students should be required to give a grid reference for their position which is correct to a tolerance. They should also be required to identify their position using map and compass and explain the reasoning involved. If using a 1:50 000 map, the tolerance would be to +/- 100 metres, but the identification of the position on the map must also be reasonable in terms of map and ground features.
- (ii) Students should be required to take bearings on ground features no less than 400 metres distant. The bearings should be accurate to a tolerance of +/- 10 .

(111) Students should be required to follow a bearing across ground which is undulating for a distance of no less than 400 metres. The path followed should lead to a point which is no more than 10 off the bearing.

Satisfactory performance for this outcome will be demonstrated by the student achieving all the performance criteria.

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The Scottish Action Plan

Donald Mack

Introduction

The Action Plan was a document published by the Scottish Education Department (SED) in 1983. The phrase 'Action Plan' was then applied to the development programme which followed and this in turn led to the introduction of SCOTVEC (Scottish Vocational Educational Council) National Certificate which was available to students from 1984 onwards. Now we tend to speak of 'National Certificate' or 'SCOTVEC modules' referring to the curricular products of the Action Plan reform and certificating agency.

Rationale of the Action Plan

The rationale of the Action Plan can be summarised as follows:

- A broad definition of aims covering knowledge/understanding, skill development and attitudes and values:
 - knowledge and understanding, of self, the community and environment
 - development of self-reliance and autonomy through the development of broad skills. These embraced both those of literacy and numeracy and other so-called basic skills and in the case of pupils who had already attained a great deal, 'appropriate challenges' were advocated. There was stress on practical, physical and life skills.
 - encouragement and fostering of the attitude and values of social co-operation.
- Vocational orientation but within the framework of a broad curriculum.
- Modular curriculum as a key structural feature.
- Rationalisation of the design of the curriculum, of the curriculum itself and delivering institutions.
- Criterion-reference assessment, emphasising competence and credit accumulation.
- Key principles of which great importance is attached to the idea of student motivation which the Action Plan saw being achieved through a combination of elements:
 - provision of choice and working out curricula by negotiation
 - an emphasis on off-site learning
 - appropriate course nature and presentation and the provision of clear signposts.
- Varied modes of delivery.
- Articulation with Highers, AFE, Youth and Adult Training.

Why Modularisation?

A modularised curriculum is designed to meet the needs of a diverse client group in different milieux - school, FE, community, MSC schemes and workplace or mixes of these.

Within the context of rapidly changing training and education needs it is flexible enough to provide for newly emerging groups whether these be adult returners or YTS trainees.

A modular structure is intended to improve progression, credit retention and transfer and freedom of movement. Hence the desirability of common units of credit which could be acquired regardless of nature of institution or mode of attendance.

Another major aim is the simplification of qualifications/certification and to reduce the plethora of validating bodies, course durations, regulations, duplications etc, in the interest of coherence, user friendliness and precision.

At a time of falling rolls there is the question of the optimum use of resources, the reduction in number of courses, increase in average size of groups, enlargement of provision (new fields/modules etc). The idea of 'common' modules serving the needs of discrete provision resulted in 74 maths courses being reduced to 32 modules.

More specifically there was the need for new provision in schools - for the new sixth form population (CPVE students in England) and to enrich the provision of highs without providing new one year courses. In FE curricular review was required in 1983 because of rapid technological development, new populations and trends (YTS, adult updating etc), lack of intermediate awards and inflexibility of the course system and problems of progression (snakes but not ladders).

The need for new provision and the FE curricular review led to the proposal for a modular framework.

Features of the Action Plan Modular Structure

A choice of over 2000 modules

The modular catalogue has over 2000 modules and typical pages are illustrated in appendix 1. The original classification into general, specialist and integrative modules was abandoned because it was not seen to have much value. While the modules vary considerably both in terms of level of demand and degree of specialisation there are now only two categories; general and specific.

Module descriptors-guidelines

Each module contains the following descriptor-guidelines:

- Type/purpose - general or specialist
- Preferred rather than prescribed entry level
- A clear specification of learning outcomes and associated performance criteria
- A specification of content and context which allows for very substantial adaption to suit the needs of the particular group of students and institution concerned.

-
- An extensive list of approaches to teaching and learning in order to stress the importance of student-centred learning and the virtue of variety of presentation by the teacher.
 - The broad range of assessment approaches with the emphasis on a match between appropriate approaches and learning outcomes.

The modular descriptor remains only a skeleton and has to be 'fleshed out' by the teacher. A number of exemplary fleshed out modules exist but in the main these are developed by the teachers in relation to the needs of their own students.

Duration of study, achievement and grading

There is a 40 hours basic design unit though variation is possible. To attain a module all learning outcomes must be undertaken. However, there is a stress upon reflection/remediation and so the need not to pack the teaching so that these become impossible. While there will be differential performances (students are human) there is generally speaking, no differential reporting. A pass is a pass and a fail is not.

Modular programmes rather than modules

Modular programmes rather than modules themselves are the significant level, e.g. for NAFE. The market value of a single module is slight (though the motivational value to the student may be high). The art of the development has been to produce modular programmes which are recognisable and acceptable by the industry concerned, while at the same time providing scope for institutions and for students to vary the typical patterns in order to allow for influence of student choice and institutional strength.

Modules embody fundamental components

Modules (and modular programmes) were designed in such a way as to incorporate, where appropriate, fundamental components such as language, mathematics, problem solving and practical activities. For example, a module on 'Business Documents and Methods of Payment' entailed writing, calculation, problem solving and practical work; a modular programme on Engineering embodied Communication, Mathematical modules, as well as the more technical modules which in turn put a heavy emphasis on practical and problem solving work.

Modules articulate with e.g. standard grade.

Modules were constructed to 'articulate' with other courses already existing or under development. For example, when the modules were first produced (in 1984) the Scottish Standard Grade Development Programme (a GCSE equivalent) was underway, and Science, Communication and Mathematical modules were written to allow for progression from Standard Grade courses or, in some cases, to incorporate common learning outcomes eg in Communication. Such articulation made student movement about the system simpler, assisted with in-service training, and diminished the need for detailed development work.

Modules can be combined with Highers or ordinary grades or can provide self contained packages which can be precursors to or equivalents of current NAFE programmes.

Sequencing rather than levels

Modules were not assigned to 'levels' or 'stages' since it was felt that such levels were frequently arbitrary and sometimes irrational; they implied equivalences between courses of radically different kinds; and they militated against the free use of modules in many different programmes. Instead, modules in given fields were arranged, where appropriate, in sequences - four modules in typewriting for example; but there was no suggestion that a Typewriting sequence had any relationship to a sequence in, say, Construction. Of course, in particular vocational fields, there are frequently 'stages' or 'levels' through which students will progress; but these stages are peculiar to the field concerned. There may be two or seven stages; nothing seems to be gained by forcing all fields into an arbitrary number of stages.

Issues of Parallel Provision: Relative Esteem, Grading and Progression.

Relative esteem and equivalence

The Action Plan is part of a system of parallel provision between the technical/vocational and academic. The issues which derive from this parallelism are 'relative esteem' and 'equivalence'.

Scottish Education Board qualifications are the principal vehicles of University and Central Institution entry. Highers are the 'benchmark' to which other provision relates, like A-levels in England and Wales. If the National Certificate could in some way be shown to be 'equivalent' to Highers the problem would be solved but such equivalence is difficult to demonstrate.

Highers	National Certificate
Norm referenced (in the main)	Criterion referenced
Graded	Ungraded
Externally assessed (in the main)	Internally assessed with external moderation

Equivalence studies have shown that in terms of *content*, comparability can be demonstrated, although the match is very uneven. In terms of *level of demand*, comparability is harder to demonstrate. Such demonstration requires exhaustive technical analysis including crucially the students' scripts. And in the end there is a value judgement about internal/external assessment issue. At present the value judgement of the SUCE is that the National Certificate provision is not equivalent to Highers in that the internal assessment arrangements have yet to prove themselves as the counterpart of the SEBs well tried system of external assessment arrangements. Another objection resides in the absence of grading of student performance in the modules - and this is yet another issue.

SCOTVEC modules are 'ungraded' i.e. there are two possibilities for the student who completes the modules - a pass or fail (though the learning objectives completed are recorded). To reiterate: differential performances by students (and such exist) are not recorded in the assessment system. Consider the not unusual situation of two students on a full-time programme both of whom have completed the same 20 or 24 modules. All very well says the employer, but which is better? Neither. Each has completed, each is competent and each 'can do' the specified tasks in the learning objectives (or could do at the time of assessment). It is not the job of education to discriminate since we are concerned to develop competence and record it. The employer has to decide for themselves. With employers the solution has been to rely upon other evidence e.g. from colleges. How quickly did the student achieve the learning objectives and student attendance record and attitude?

And thereby hangs another problem: student motivation. From the outset there have been statements that, whereas the generality of students like the modular system - clear targets, short units, feedback on progress - the ablest are demotivated. This charge has recently been repeated in a survey of the impact of the National Certificate carried out by the EIS.

In the nature of things, this is difficult to demonstrate (we hope by means of a forthcoming inspection to look at this among other issues). However, true or not, the charge can be seen as significant, affecting user attitude of National Certificate provision. And the user whose attitude is most important in this debate is once again the university constituency. Par excellence, if you will forgive the pun, they are concerned to recruit those they perceive as the best, using clear cut, publicly recognised criteria, preferably reducible to a simple point-count system: 3 for an A etc. - and A is *better* than B.

How then to relate 3 modules (120 hours) to a Higher, even if the content of the equivalence is agreed. The answer to this question is by no means easy, indeed it has eluded us so far. Various 'solutions' have been canvassed but none have yet proved decisive and most suffer from the defect of refuting the logic of the modular system. Perhaps the least pernicious solution is the add on/end test (an integrative half module, say) to enable connections to be made among elements, to assist with consolidation, and to permit grading. The student would be credited of course, for any achievement in individual modules. One other approach exists, summed up in the Latin tag '*quod principi placuit legis habet vigorem*' and it is not inconceivable that it could be applied in certain circumstances.

Progression

Currently in Scotland our SWAP (Scottish Wider Access Programme) has just been set in train by the Scottish Secretary of State. The broad objectives are concerned with increasing entry to and progression within AFE and HE by encouraging systems of preparation, progression, credit retention and transfer. The approach entails:

- development of unit-credit (modular) system in AFE (HNC/HND) while retaining group awards.
- assessing of NC provision to provide the foundation of this development;
- construction of system of 'bridges and ladders' to facilitate progression and give recognition for attainment achieved, even if falling short of a 'full' qualification;
- involving a complex of institutions in the process: FE colleges, Central Institutions and Universities, on a consortium basis.

This shows the phenomenon of parallelism in relief: the two routes to HE are set out starkly

Highers to University or NC to HND (and perhaps to University)

All sorts of interesting questions reside in this sort of development:

- relative efficacy of the two forms of preparation
- adhesion to this or that form by students of different provenance
- empirical evidence of 'equivalence'
- market value of certificates of different types
- attitude of HE gatekeepers in the most prestigious faculties

Modules and the System of Reform

How far should modularisation be taken?

Modules can be seen by enthusiasts as a panacea for all the ills which ail curriculum, assessment, education . . . and this is probably pitching expectations too high. Some questions about modules have to be asked before enthusiasm becomes overwhelming. How far should modularisation be taken? Are there aspects of the curriculum which it is not desirable or profitable to modularise?

Some assertions about modularisation are well known:

- they undermine a sense of whole
- they fragment learning
- they reduce vocational education to a series of discrete and possibly uncoordinated 'taskettes'
- they do not take account of underlying or overarching themes/principles/concepts
- they undermine generic skills or at least do not permit their proper cultivation
- they enable employers to demand the narrowest, most immediate of programmes and discourage transfer

and so on

Perhaps at this stage of development, the sensible thing is to recognise the virtues of judicious modularisation allied to the virtues of fully developed coherent courses.

A reductive approach to certification bodies has proved generally beneficial eg in relation to the Action Plan:

- SCOTEC and SCOTBEC amalgamated to form SCOTVEC
- CGLI activity diminished through equivalence agreements
- RSA activity diminished through market pressure

There now exists in the field SCOTVEC AND SEB (Scottish Examination Board). The single body in the vocational field has ensured :

- rationalisation of provision (common catalogue/format)
- rapidity of action e.g. ROA potential
- responsiveness e.g. to TVEI, YTS, ET
- non-proliferation e.g CPVE-like ad hoc provision
- a basis for 'harmonisation' of VET and 'academic' or 'general' provision.

Thus the NCVQ exercise was not necessary in Scotland, the essential having been done or capable of ready assimilation (e.g. LIB-devised competences being absorbed in, say, the clerical secretarial field).

The single most conspicuous advantage of modularisation lies in flexibility. Consider for example a hypothetical reform of Scottish/English upper school education on, say, abitur-like lines (no such reform is under consideration) in which students can take a combination of academic subjects (see appendix 2). The aim is to produce a combination of breadth and depth (recently considered by Higginson), together with requirements of a specific kind (continuation of maths/ ML/science onto the 16-18 stage), and the notion of this package/group, baccalaureat, abitur or whatever - then modularisation is a key but not exclusive element. Certain subjects can be studied in depth as desired (A grades), others can be studied in depth while extending the range (highers) and other elements are added according to the rules of the game through modules (see appendix 3). By the same approach, but using the French baccalaureat as a model, it would be possible to generate a range of academic and vocational diplomas with many common elements.

Either approach eschews the problems that can derive from an open access module system which lacks clear patterns of modular programming, generating the attendant problem of user confusion, currency value and problematical coherence. Modules, in other words are contributory to solutions, they are not solutions in themselves. However in Scotland, as we consider issues of curriculum reform - in school education or in VET - we inevitably take modularisation into account; and recent evidences from England (NCVQ, Higginson) suggest that this is becoming the case here too.

Appendix 1

SCOTTISH EDUCATION DEPARTMENT
New St. Andrew's House Edinburgh EH1 3SY

16 - 18 MODULE DESCRIPTOR - GUIDELINES

Ref No./Date	1.9.83
Title	
Type and Purpose	[General or Specialist] [A brief statement indicating the broad aims of the module and the probable target audience]
Preferred Entry Level	[[Expressed in terms of achievement, for example, F, G, C or previous modules]
Learning Outcomes	<p>The student should:</p> <ul style="list-style-type: none"> - [knowledge:- know and use the key ideas, principles, language structure, processes ... etc.] - [skills:- communicate clearly, plan, design, solve problems, manipulate data, order ideas. diagnose, rectify, assemble, dismantle. manipulate a keyboard, align, measure... etc.] - [behaviours:- work safely, hygienically, co-operatively, diligently ... etc.]
Content/Context	<p>[Content will] be expressed according to the nature of particular subject areas. In some cases use and wont and industrial expectation will influence the form of presentation and the degree of specificity required; in other cases the material selected in relation to learning outcomes and the special needs of the student group will be relatively free of these constraints.</p> <p>Overloading should be avoided: learners should be provided with opportunities for reflection and reinforcement.]</p>

<p>Learning and Teaching Approaches</p>	<p>[Appropriate to achieving the learning outcomes, selected from among the following:</p> <table border="0"> <tr> <td>Working alone</td> <td>Practical work</td> </tr> <tr> <td>Working in pairs</td> <td>Case studies</td> </tr> <tr> <td>Working in groups</td> <td>Projects</td> </tr> <tr> <td>Group discussion</td> <td>Assignments</td> </tr> <tr> <td>Debates</td> <td>Simulations</td> </tr> <tr> <td>Exposition</td> <td>Individualised learning</td> </tr> <tr> <td>Demonstration</td> <td>Computer Assisted learning</td> </tr> <tr> <td>Team teaching</td> <td>Programmed learning</td> </tr> <tr> <td>Visitors</td> <td>Work experience</td> </tr> <tr> <td>Surveys</td> <td>Residential experience</td> </tr> <tr> <td>Questionnaires</td> <td>Field studies</td> </tr> <tr> <td>Interviews</td> <td>Visits</td> </tr> <tr> <td></td> <td>etc]</td> </tr> </table>	Working alone	Practical work	Working in pairs	Case studies	Working in groups	Projects	Group discussion	Assignments	Debates	Simulations	Exposition	Individualised learning	Demonstration	Computer Assisted learning	Team teaching	Programmed learning	Visitors	Work experience	Surveys	Residential experience	Questionnaires	Field studies	Interviews	Visits		etc]
Working alone	Practical work																										
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Surveys	Residential experience																										
Questionnaires	Field studies																										
Interviews	Visits																										
	etc]																										
<p>Assessment Procedures</p>	<p>[Appropriate to the learning outcomes and the selected learning approaches - and indicating what are considered to be satisfactory performances for each learning outcome:</p> <table border="0"> <tr> <td>Objective test (eg multiple-choice)</td> <td>Observations of performance <u>in</u>:</td> </tr> <tr> <td>Short Answer</td> <td>Practical, case studies, projects etc</td> </tr> <tr> <td>Essay</td> <td>Reports (oral/written/graphic) resulting <u>from</u>:</td> </tr> <tr> <td>Log book</td> <td>Practical, case studies, projects etc</td> </tr> <tr> <td>Portfolio</td> <td>Finished produce</td> </tr> <tr> <td>Questionnaire</td> <td>Orals]</td> </tr> <tr> <td>Self-profile</td> <td></td> </tr> </table>	Objective test (eg multiple-choice)	Observations of performance <u>in</u> :	Short Answer	Practical, case studies, projects etc	Essay	Reports (oral/written/graphic) resulting <u>from</u> :	Log book	Practical, case studies, projects etc	Portfolio	Finished produce	Questionnaire	Orals]	Self-profile													
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Appendix 2

POSSIBLE SOLUTIONS TO THE EQUIVALENCE PROBLEM

- QUANTITATIVE APPROACH
(ABLER IS FASTER/4 OR 5 MODULES RATHER THAN 3)

- DISTINCTION APPROACH

- ADD-ON END TEST
(TAUTOLOGY, PARADOX, SAMPLING PROBLEM)

- COMPARATIVE PROFILES

- INTEGRATIVE MODULE

- HOLISTIC APPROACH

- EMPIRICAL EVIDENCE
(RESEARCH, EXPERIENCE OF STUDENTS' WORK)

- VALUE JUDGEMENT (CR/NR)

Appendix 3

**MODULES AND SYSTEM REFORM
ABITUR-LIKE 2 YEAR COURSE 16-18**

A GRADE PHYSICS		A GRADE FRENCH	
HIGHER GRADE CHEMISTRY	HIGHER GRADE ENGLISH	HIGHER GRADE MATHEMATICS	
MODULE PHILOSOPHY 1	MODULE GERMAN 1	MODULE HISTORY	
MODULE PHILOSOPHY 2	MODULE GERMAN 2	'MODULE' DISSERTATION/PROJECT	

SAMPLE CRITERIA:

- 2 As + 3 Hs + 6 MODULES
- AT LEAST 1 MODULE OR BETTER IN MATHEMATICS, SCIENCE SUBJECT, MODERN LANGUAGE, SOCIAL SUBJECT, PHILOSOPHY AND DISSERTATION/PROJECT

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THE PROMISE OF SKILL CERTIFICATION FOR IMPROVING
OCCUPATIONAL TRAINING IN AMERICA

by

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ABSTRACT

This paper argues for the development of a unified national system of skill standards, along with a voluntary process of skill assessment and certification. It reviews existing American practices and indicates new developments in this arena. The paper concludes by outlining suggested guidelines for implementing a system of industry-based assessment and certification of occupational skills.

Introduction

Increasing attention in the United States is being devoted to devising more systematic approaches to industry-based national skill assessment and certification. For example, *Investing in People*, the report of the Commission on Workforce Quality and Labor Market Efficiency to the U.S. Department of Labor, concluded that "Employers should be encouraged to work together to establish training programs and certification procedures for skills that workers gain through on-the-job training" (U.S. Department of Labor, Commission on Workforce Quality and Labor Market Efficiency, 1989, p. 4). Recent reports of the U.S. General Accounting Office (GAO) called for a closer look at skill assessment and certification as a training strategy to improve American competitiveness (GAO, May 1990 and GAO, August 1991). The Commission on Skills of the American Workforce went much further in its report, *America's Choice: high skills or low wages!* The Commission called for the creation of "a comprehensive system of technical and professional educational certificates and associate degrees for the majority of our students and adult workers who do not pursue a baccalaureate degree" (Commission on Skills of the American Workforce, 1990, p. 77). Members of the Commission envisioned a comprehensive system of training and certification to "professionalize" non-college occupations. The Commission recommended that a National Board for Professional and Technical Standards be established by the Secretary of Labor, in cooperation with the Secretaries of Education and Commerce. Following up on these recommendations, in October 1991, Senators Kennedy and Hatfield introduced the "High Skills, Competitive Workforce Act of 1991" (S.1970), which among other things, establishes a National Board for Professional and Technical Standards. Representatives Gebhardt and Regula have introduced a companion bill in the House (H.R. 3470).

The competitiveness of American industry in the global economy is a driving force here (U.S. Congress, Office of Technology Assessment (OTA), 1990). To remain internationally competitive at high wages, American workers must be highly skilled, which in turn implies that America must have world-class learning systems. In order to devise a truly world-class system of education and training, one needs perspective on the activities and approaches to certify occupational skills underway in selected other leading states and in other industrialized nations. **All other advanced industrial nations have developed systematic approaches to foster training and skill certification.** In many nations, skill assessment and certification is a built-in feature of apprenticeship or other initial training scheme. For example, **France** has its system of CAP exams. **Great**

Britain has begun to rationalize its numerous certification boards and agencies through its recently established National Council on Occupational Qualifications. **Japan** supports a national skill examination and certification system for more than 120 occupations. The system is used to validate the skills of individuals who graduate from vocational training centers and to provide incumbent workers a meaningful way of documenting their skills. Skill certification is perhaps most developed of all in **Germany**, where skill certification is an integral component of the apprenticeship system and all graduating apprentices must successfully complete the examination in their occupational speciality. Tests are developed following detailed national training standards devised by expert committees of industry, labor and education representatives, working in collaboration with the National Institute for Vocational Education (BiBB). Tests include written, oral, and practical sections. They are administered at the local level by Chambers of Industry and Commerce or Chambers of Handicrafts. All apprenticeship graduates are expected to complete these tests; about 90 percent of those who take the tests pass them.

A second significant force is increased emphasis on accountability in spending public monies. Across America a growing theme in publicly funded education and training has been accountability for outcomes. Concerns about the lack of performance standards in vocational education at the secondary level (OTA, 1989) prompted passage of Section 115 of the 1990 amendments to the Carl Perkins Act requiring states to develop such standards. Likewise, concern has been building about the performance of certain proprietary schools which are largely supported by public monies through Pell grants and various student loan programs (GAO, 1984). Default rates are unacceptably high and have imperiled the future of federal systems of loans to students (McCormick, July, 1989; Putka, 1989, pp. 1A and 13A). Some view the development of an industry-based skill assessment and certification system as a means to provide an independent check on the relevance and quality of training provided with public funds.

Others advocate skill certification as a vehicle to weave together the numerous and highly fragmented training programs and approaches that are used in America to prepare individuals for occupations, especially for jobs not requiring a baccalaureate college degree. The United States system of training may be more appropriately described as a "non-system." It confounds foreign visitors. During 1979, a tripartite team of Australians visited the United States to determine how Americans receive training in electrical and metal trades. Their aim was to compile information to enable the Australian government to make determinations about the applicants for immigration. Australia wanted skilled labor in these

occupations, but did not know how to judge the credentials of American applicants. Although the team acknowledged the existence of a wide variety of routes to skilled status in America, they recommended that the Australian government ignore non-systematic routes to skill acquisition. They concluded that registered apprenticeships offered America's only meaningful credential in the electrical and metal trades because apprenticeships provided formal, structured, documented, and reasonably standardized training (Australian Department of Industrial Relations, 1981). While we may not be so concerned about facilitating the ability of the Australian government to sort through American applicants in order to select skilled workers, it must be realized that American employers are in almost exactly the same position. How can an American employer be certain that job applicants have the skills they say they have?

In short, developing a national system of industry-based skill assessment and certification is attractive on numerous grounds. It can provide a means of competency assessment that is independent of training deliverers or skill acquisition methods. Thus, once employers agree to skill standards and assessment procedures, they can be used consistently to assess outcomes across a variety of training programs, including training received in secondary and postsecondary vocational and technical programs, proprietary schools, apprenticeships, on-the-job training, and Job Training Partnership Act (JTPA) programs for occupational preparation. Industry-based skill certification emphasizes training outcomes and competencies gained rather than time spent in training. Skill certification has appeal because it is outcome oriented -- an arena where government efforts are thought to be properly focused. Well-developed skill certification schemes can help employers to better screen job applicants. Finally, as demonstrated by experience in Germany and Japan, skill certification exams can elevate the status of occupations and the workers in them. Holding a meaningful, recognized skill mastery certificate is a source of pride to workers. Even more important for workers, skill certification can promote worker mobility and improve transferability of skills.

It can help motivate learners by making the goals of learning clearer and more explicitly connecting reward with achievement in school or training. For example, skill assessment and certification can have the important outcome of making high school youths aware of the insufficiency of their training to practice the occupation of their choice, thereby encouraging them to continue their learning to achieve full standards.

By making standards clearer, an industry-based skill assessment and certification system can aid all training providers to gear their efforts to skills that are relevant in industry. A skill assessment and certification system can guide the design of training in whatever for it takes -- work-based learning, Tech Prep (formerly called "2 + 2") programs, proprietary school training, school-to-apprenticeship programs, and other efforts. Articulation can be improved and fragmentation of training reduced. A national skill assessment and certification system could help link secondary-level vocational/technical education with other education and training programs by showing more explicitly and clearly what is and is not accomplished in high school. It also could help reduce unnecessary redundancy in training graduating students and learners at all levels.

What makes most sense is establishing a national unified system of industry-based skill assessment and certification applicable regardless of the source or method of skill acquisition and relevant to the needs of the leading edge companies. Such a system would more clearly and forcefully articulate industry needs to training providers and would encourage public education and training institutions to become more responsive and effective in meeting needs for skilled workers. Establishing separate skill standards and certification for each type of training program (e.g., cooperative education, apprenticeships, JTPA, proprietary schools, or community colleges) would compound the problems of fragmentation already characteristic of training in America.

In short, organizing a unified common national system of industry-based skill assessment and certification could improve the effectiveness and efficiency of American education and training programs in several important ways. This paper argues for the converting our inefficient "non-system" of training into a coherent, **standards-driven system** that improves both **information** and **incentives** for workers, employers, and training providers alike through development of a voluntary system of national skill standards and assessment. Fortunately, as the next section points out, there is some American experience with this subject to draw upon.

Existing Skill Certification Practices in the United States

Although America does not have a comprehensive system similar to that found in other nations, it offers a variety of experience to draw upon. Perhaps the most ubiquitous

example of a performance-based skill certification scheme is the testing and certification procedures that most states use to license drivers of motor vehicles.

Past experience in the United States across a variety of occupations has demonstrated that skill certification can become a highly political issue. In some cases, training providers have dominated the skill certification process. Yet as users of training, workers and their employers have primary interest in skill certification. Indeed, those working closest to the occupation have the raw knowledge to establish appropriate assessment. There are also legitimate public interests here to be served as well. Professional groups have used skill certification and licensing as means to restrict entry to their occupation (Shimberg, 1982).

Provisions for national standards are in place in a few fields, but they are commonly not developed systematically. America has relied on voluntary associations for accreditation and skill certification. A wide variety of paths of skill acquisition exists, ranging from training in vocational education at the secondary and post-secondary public schools, in proprietary schools, in apprenticeship and employer-sponsored training, in the military, and others.

In the United States, program accreditation is more developed than is the assessment and certification of skills possessed by individuals who have been trained. Yet accreditation has been more geared to evaluating the quality of program inputs than the outcomes of education or training. Today more than 90 accrediting bodies must be approved by the U.S. Secretary of Education's National Advisory Committee on Accreditation and Institutional Eligibility at least once every four years. Accreditation of a training institution by any one of the 90 approved accrediting bodies is a necessary qualification to obtain funding from the U.S. Department of Education through its various programs, such as Pell Grants. The lobby groups are very strong -- so strong that the Department of Education has encountered significant difficulties in resolving problems with accrediting groups and training institutions, despite loan default rates running as high as 80 percent!

Experience with Skill Certification in Existing American Training Programs

Apprenticeship. To obtain registration approval for an apprenticeship, the occupation must meet four criteria specified in the Code of Federal Regulations, Section 2, Part 29 (29 CFR 29), and the proposed program must adhere to certain standards, including having a limited probation period and adhering to equal opportunity practices in recruitment. Nevertheless, at the present time, American apprenticeship is more a national registration system than a skills certification system. This is one reason why quality of training in apprenticeship surfaced as such a common concern in the recent "Apprenticeship 2000" Initiative (U.S. Department of Labor, Bureau of Apprenticeship and Training, August 1988; U.S. Department of Labor, Employment and Training Administration, November 1989). Although an apprenticeship completion certificate issued by the U.S. Department of Labor can be an important credential, a journeyman union card is often a much more important certification of skill achieved.

An apprenticeship program can be registered under local standards if it meets the terms outlined in 29 CFR 29, or it can be registered under national standards on file with the Bureau of Apprenticeship and Training in the U.S. Department of Labor. Currently, less than a third of the approximately 820 apprenticeable occupations have national training standards filed with the Bureau of Apprenticeship and Training. Also, in most trades, the standards currently registered are expressed in terms of a rotational schedule showing the numbers of hours worked on particular work processes. Growing concerns have been raised about the need for more specific training standards based on competencies rather than time spent in training. In other words, critics of apprenticeship want skill levels specified rather than merely the number of hours worked in each work process, but there is little agreement on how to accomplish it. Moving away from a "time-based" scheme to "competency-based" training that specifies the nature and level of competencies to be achieved is attractive, but it needs to be recognized that all schooling in America from kindergarten through graduate school, is organized in a time-based mode (e.g., semesters, academic quarters). It is likely that new training schemes will be based on elaborated competencies that are attained in a flexible time framework.

One of the standards for registering an apprenticeship training program is that it have provisions for providing credit for prior learning and experience [29 CFR 29.5(12)]. On paper, every apprenticeship program includes such a credit provision, yet implementation in practice varies enormously. Most programs award credit on an

individual basis -- based on skills tests or assessments of some type, and/or performance on the job. Only a few apprenticeship programs offer credit for prior training in the trade in a vocational or technical school on the basis of a "blanket" certification. Where this occurs, it is with a particular school with which the apprenticeship sponsor has enjoyed an established relationship of trust.

The Job Training Partnership Act. Section 206 of JTPA authorizes Private Industry Councils (PICs) to approve competency systems in three areas: (1) pre-employment/work maturity, (2) basic skills, and (3) job specific skills. Approval of a competency system by the PIC allows the Service Delivery Area (SDA) to count as "positive" the terminations of individuals who achieve a level of competency in these areas yet do not obtain a job.

Almost all PICs have approved competency systems in pre-employment/work maturity. These are job-seeking skills as well as job-holding skills that are common across occupations. Increasingly, competency systems in the second area -- basic skills -- have been approved by the PICs. Basic skills are required for most jobs, and they are an important foundation for learning advanced occupational skills.

However, relatively few competency systems have yet been approved by PICs in the area of "job-specific" skills. In practice, this may be due to the fact that taking competency terminations (i.e., without job placement) makes less sense in the case of job-specific training. A PIC member might legitimately ask "if the participants received job-specific training, why aren't they employed in the occupation for which they were trained?" Another factor is that the PICs are geographically organized bodies whose representatives are drawn from a variety of industries. This means they are not in a position to assess the validity of job-specific skills. This task is a more appropriate function of associations organized by industry. Although virtually all industries have organized associations, most do not deal with training. With a few notable exceptions, American industry associations have demonstrated little active interest in training to date (Colgate, 1989).

Existing U.S. Industry Practices in Assessment and Certification

Although skill assessment and certification are neither universal nor highly visible, a few American industries have accumulated substantial experience in these areas. The

example that follows -- automobile service -- not only illustrates what is being done but gives a sense of what could be accomplished by a skill certification effort that is systematically organized and promoted.

Skill Certification in Automobile Service. Concern about inadequacies in the number and quality of skilled mechanics prompted the American automotive service industry to undertake initiatives to upgrade automotive service training offered by public and proprietary schools. The industry was motivated to regulate itself in part due to the rising chorus of consumer complaints about persistent, costly, and troublesome auto repair problems. Several states passed consumer protection statutes and imposed mandatory licensing on automobile mechanics. Action has even been contemplated at the federal level (U.S. General Accounting Office, 1980). Such pressures from consumer groups and government agencies were certainly factors in mobilizing the automotive service industry into action.

The thrust of the industry's response has been to establish voluntary testing and certification programs for mechanics and more recently for training programs. These certification efforts were developed and funded through the initiative of private industry on a national basis.

In 1972, the industry established the National Institute for Automotive Service Excellence (ASE) as a nonprofit organization to offer a program of voluntary testing and certification of automotive technicians. A large Board of Directors drawn from all segments of the industry nationally was selected to administer the institute. Paper and pencil tests initially were developed for six automotive mechanic areas of proficiency. Subsequently, these were expanded to include testing across sixteen different fields, including heavy-duty truck repair and body/paint. From 1972 to 1984, over a quarter of a million automotive technicians were certified. More than 168,000 of these technicians held valid certifications at the beginning of 1984.

Tests are offered for a fee, generally paid by the individual tested. Tests are regularly offered twice a year, in May and November. Those who pass the tests are given certificates which are valid for five (5) years. A program for recertification offering shorter exams aims to assure that mechanics stay up-to-date with modern repair practices. The certificates occasionally can be found framed on the walls of customer waiting areas of auto repair shops.

Program Accreditation in Automobile Service. In 1978, the Motor Vehicle Manufacturing Association allocated \$400,000 to a project to develop comprehensive national certification standards and an objective process for evaluating training programs for automotive mechanics. In this effort the Motor Vehicle Manufacturing Association enlisted the assistance of the Southern Association of Colleges and Schools (SACS) to conduct a three-year study involving both industry and school participation. The results of this Automobile Mechanic Training Evaluation Project were made available to the National Institute for Automotive Service Excellence in 1982 to develop an industry-sponsored mechanism for certifying training programs in automotive service offered by any public or private secondary or postsecondary school, technical institute, or community college. A nonprofit organization, the National Automotive Technicians Education Foundation (NATEF), was formed to develop and encourage technical education for mechanics. NATEF administers a certification process consisting of two parts: self-evaluation and an on-site review. Local costs of the independent review teams are to be paid by the school seeking certification. These expenses include an honorarium and travel expenses for the team leader and other team expenses totaling an estimated \$400 to \$500 per school.

With industry contributions, NATEF aims to fund the national expenses of the organization for registering, evaluating and certifying training programs through industry contributions. As of May 1984, the National Automotive Technicians Education Foundation shared office space with the National Institute for Automotive Service Excellence to save monies. Activated in 1982, NATEF had fully approved training programs in fifteen schools by July 1984. An additional twenty-six schools were under evaluation by field teams; and another 185 schools were undergoing self-evaluation, using NATEF materials. Also by July 1984, evaluation leaders had been trained in thirteen states.

The automobile service industry has attempted to give recognition to the best mechanics' training through an awards program. Beginning in 1984, school administrators in each state were asked to identify the best programs in their own states. Industry representatives then judge the best training in the country from among those nominated by the states. Awards are announced at the annual convention of the American Vocational Association.

Although entirely initiated and sponsored by industry, ASE and NATEF have made significant efforts to involve vocational educators in their initiatives. The Board of Directors of ASE includes three vocational educators. NATEF has hired nationally respected former state directors of vocational and career education as full-time consultants to the project. NATEF also has worked closely with the American Vocational Association (AVA) to implement industry certification for training programs.

It may be too early to tell whether the automotive service program accreditation efforts will attract sufficient industry contributions and school interest in accreditation to be successful. But NATEF has received inquiries from other industries interested in replicating the effort.

Finally, it should be noted that the experience in automobile service is highlighted here not because it has been ideal or perfect. Indeed, the skill certification process used is inadequate because it includes only paper and pencil exams without any assessment of practical skills. But automotive service is an important example which demonstrates that industry can and will take action if properly motivated and if the resources are made available to do so.

Developing an Infrastructure Within American Industry to Support Skill Assessment and Certification

The report of the Commission on Skills of the American Workforce, *America's Choice*, pointed out the notable lack of American industry-based networks with expertise in education and training issues. This is in sharp contrast to other industrialized countries where such networks are formally used by employers, unions, and government to establish (1) **common criteria** regarding skill requirements needed within occupational categories, (2) **common curricula and training materials** for use in a wide variety of settings or training venues, (3) **common processes** for young people to enter employment and to gain training linked with schooling, (4) **common tests and assessments** to determine if individuals have gained necessary knowledge and skills, and (5) **common certification and award systems** for individuals who have satisfactorily completed training.

Prompted in part by recommendations from various commissions, the U.S. Department of Labor established two new advisory bodies in 1990. In February 1990,

Labor Secretary Elizabeth Dole established the Secretary's Commission on Achieving Necessary Skills (SCANS), chaired by former Secretary of Labor Bill Brock and directed by Arnold Packer. Among other tasks, the two-year commission is considering and reporting on the topic of skill certification, in terms of both initial workforce entry skills and further occupational skills (U.S. Department of Labor, Secretary's Commission on Achieving Necessary Skills, June 1991.)

In October 1990, the U.S. Department of Labor created the National Advisory Commission on Work-based Learning to advise the Secretary of Labor on

"ways to support the efforts of America companies to develop high productivity work systems. This will include a voluntary system for accrediting training programs and credentialing trainees' skills, easing the transition from school to work for non-college bound youth and providing technical assistance to firms reorganizing to enhance performance" (U.S. Department of Labor, Employment and Training Administration, News Release 91-58).

In April 1991, President George Bush announced his education initiative entitled "America 2000" which included mention of private-sector skill standards as a part of Track III which proposed that "Every adult American will be literate and will possess the knowledge and skills necessary to compete in a global economy and exercise the rights and responsibilities of citizenship" (U.S. Department of Education, April 1991, pp. 23-24). Pursuant to this announcement, the U.S. Department of Labor, U.S. Department of Education, and the National Advisory Commission Work-Based Learning published an issues paper and announced a series of public hearings on skill standards and certification to be held during April 1992 (U.S. Department of Labor, Employment and Training Administration and U.S. Department of Education, Office of Vocational and Adult Education, 1992).

Outside of government, efforts are proceeding to investigate, develop, and implement skill assessment and certification procedures in industry. The Center for Government Studies at Northern Illinois University is organizing a project to establish skill assessment and certification in the metalworking industry (Sheets, 1991). Working with the National Governors Association, the project aims to develop into a multistate consortium specifying skill standards for selected industries that would be applicable across participating states. Similarly, work on identifying and describing (or "benchmarking") the

best practices in industry-based skill assessment and certification has begun both at the Institute for Educational Leadership and the National Alliance of Business. In addition, staff at the National Center on Education and the Economy are compiling and translating occupational skill standards and assessment instruments from leading edge countries.

At this point it appears that some action will be taken on skill assessment and certification. The window of opportunity is clearly open now. However, many fear that implementation will be inadequate and that the country will discard the idea and move on to something else.

Some Guiding Principles to be Considered in Implementing a System of Industry-Based Assessment and Certification of Occupational Skills

Developing industry-based skill assessment and certification on a systematic basis will require some form of government funding or other incentive, as well as seed monies from various industrial foundations. However, public funding should be made available only if the process has the consensus of the industry. Also, to get the development process started properly, it may be necessary for the federal government to designate and organize various industry lead groups and to impose some broad guidelines on the process, such as the following:

(1) Assessment and certification functions should be conducted independently of any training providers and be neutral to the method of skill acquisition used. Assessment and certification should be driven by employers and workers in the industries affected. An independent body representing the industry is needed to confer a stamp of approval if certification is to be meaningful and widely accepted by employers. The industry participants involved should be carefully chosen to assure that they are widely respected among their peers. Since using the proposed skill certifications will be voluntary for both employers and workers, meaningful use will depend on the competence, quality, and credibility of the work of the industry groups convened and the vigor with which the assessment and certification is disseminated and made conveniently available. If skill certification is to affect decisions regarding hiring and promotion, it must be well-designed and well-implemented.

This enterprise is unlikely to succeed if it is viewed as a government initiative. It needs to be a national or a state/national effort rather than federal effort.

(2) A skill certification scheme should make use of a variety of assessment instruments, including written, oral, and practical or performance-based tests as appropriate. Assessment should not be a paper and pencil exam taken at a single sitting but rather a cumulative assessment process, including practical exams such as projects.

Recognizing that there is no one best, universally accepted method to conduct job analyses and to devise appropriate skill assessment instruments, decisions on procedures used are best left to industry. The industry should use whatever procedures can gain the greatest acceptance and credibility. A given industry may decide to undertake the development of an assessment and certification process using its own personnel, by hiring outside expertise, or some combination.

(3) Multiple levels of mastery should be recognized. Multiple levels of mastery would foster more widespread use of career ladders. The first level would require whatever skills entry workers must have to practice the occupation.

(4) The assessment and certification scheme should promote broad training and encourage continuous learning. Broadly trained workers are more adaptable to change than are workers with more narrow knowledge and skills. Workers with a foundation of broad training are adaptable and flexible and can adjust to changes in the market or in technology that are unpredictable but certain to occur.

(5) Any skills standard developed should be geared to the leading edge firms in the industry, or the "high performance work organizations," as the Commission on Skills of the America Workforce called them. Also needed is a horizon-scanning function that monitors and benchmarks best practices to assure that the system maintains pace with world standards in technology and management practices. It is critical to avoid locking in existing practices that need to be changed.

(6) The assessment and certification system should be voluntary, not mandatory. It should win participants and advocates by the quality of its standards.

(7) Any system of skill assessment and certification should not ignore existing assessment and certification practices across America. Although American experience in this area is spotty and needs improvement and expansion, it would

be foolish to begin *de novo*. Much can be learned from a close examination of efforts on American soil. We also need to respect the pluralistic marketplace of the American training system and turn our "non-system" into a "system" by weaving it together with assessment and certification and making the performance of training deliverers known to consumers. Well-functioning markets rely on well-informed consumers; and the market for training is no different from other markets in this respect.

(8) Provision should be made for updating the skill standards to maintain pace with advances in technology and the organization of work. A potential pitfall of any standard-setting practice is rigidity. A key is to maintain sufficient flexibility to adapt to the changing needs and circumstances of industry.

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TESTIMONY BEFORE SUBCOMMITTEE ON ELEMENTARY, SECONDARY, AND
VOCATIONAL EDUCATION OF U.S. HOUSE OF REPRESENTATIVES

March 25, 1992

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Chairman Kildee and Congressmen, I appreciate the honor of being asked to testify on the issue of a National Board on Workforce Skills. My comments are based on research conducted by the Institute on Education and the Economy, the National Center for Research on Vocational Education, and the SCANS Commission.

From this perspective, I want to address three questions.

- (1) Do we need a National Board on Workforce Skills?
- (2) Should it be a *national* board? Or should the issue be left up to the individual states or local communities?
- (3) What functions should the Board have?

Do We Need a National Board on Workforce Skills?

At the turn of this century major figures at Columbia and Harvard Universities helped to create what is now known as the College Board. Their objective was to simplify, systematize, and communicate colleges' skill requirements for college entry to high school students and K-12 educators. I suggest that almost a century later we need analogously visible and organized information about the skills required for workplace entry. My reasons are as follows.

The economy is shifting from mass to flexible production. Pressures on U.S. industries are gradually and slowly driving U.S. companies to new and innovative ways of organizing work. These reorganizations of work are blurring the skill differences between higher and lower skill jobs. For example, decision-making, problem-solving, and quality-control responsibilities are increasingly being shifted from managerial and specialized personnel to workers on the shop floor.

Schools are still organized to fuel a mass production economy. Schools tend to seriously prepare the B.A.-bound, but to merely "carry" the others. This made sense when many of the non-B.A.-bound went into mass production workplaces based on routinized, repetitive work. As Ben Hamper, author of the *Riveter Rat*, put it, "Working the GM line was like being paid to flunk high school for the rest of your life." Reorganized work destroys the fit between traditionally organized work and education. We now need to take

seriously the development of skills in all students, especially if we want to position them to obtain the middle and high skill jobs that pay wages that let them form and maintain families.

A National Board on Workforce Skills can help to make employers visible and organized customers of the schools, just as the College Board helped to make colleges visible and organized customers of K-12 education. Colleges have been the primary customer of K-12 education, not employers. In other words, K-12 students and educators customarily organize their activities around post-secondary education. We are consequently in a situation where the K-12 system is stunningly ill-equipped and undisposed to understand the skill implications of the economy, as these affect all students, both the B.A.-bound and those whom, traditionally, they have only "carried".

To focus K-12 schools on another major customer for their services (employers), we need and lack a technically and politically credible source of information about the foundation and generic workplace skills required across occupations and industries, the levels of these skills that are required, changes in these skills, and the extent to which possession of these skills in fact predict to better workplace performance (validation).

Should the Board be a National Board?

Should a Board on Workforce Skills be national in scope or left up to the states or local communities?

I argue that the Board should be national in scope. Individual states, such as Michigan, Wisconsin, Indiana, and Oregon, are already struggling to define the foundation and generic workplace skills required across occupations and industries. However, the task of identifying, establishing levels for, updating, and validating these skills for the workplace is neither technically easy nor cheap. A National Board on Workforce Skills makes sense in an era when we can ill-afford the inefficiencies of duplicative state efforts, especially in a domain that is more national than state- or community-specific in nature.

What Functions Should the Board Have?

I suggest that the National Board on Workforce Skills focus on the foundation knowledge, foundation skills, and generic workplace skills that individuals need to perform well in a broad range of restructured workplaces. The performance levels set for these skills should position individuals for more specialized education and training. In other words, the Board would not focus on industry or occupationally-specific standards, but on standards for the foundation and generic workplace skills that enter into industry and occupationally-specific skills.

Within this mandate, I suggest that the Board have these functions:

- The Board updates the skills by benchmarking them against best—and changing—international practice.

- It establishes the levels of performance that individuals need in these skills. Educators use terms such as "eighth grade reading level" to describe an individual's performance within the school system, but knowing where a person stands on these levels tells us nothing about the reading levels needed in restructured workplaces.
- The Board conducts validity studies of the foundation and generic workplace skills. All this means is that the Board determines whether performing these skills well in fact predicts to better workplace performance.
- The Board acts as a forum and common meeting ground for employers who use skills and for educators who develop them. This bridge or communication function is particularly important between employers and K-12 educators.
- The Board co-ordinates its activities with those of any national system of industry and occupationally-specific boards.
- The Board is a source of information for schools, employers, employees, students, and job applicants about the types and levels of foundation and generic skills required for restructured workplaces.

Should the Board have an assessment function? The answer seems to me to depend on how the current national assessment debate is resolved. The Board may simply act to insure that other assessment groups incorporate the types and levels of workplace skills identified by the Board into its assessments. It may accredit assessments designed by others or assessment processes run by others.

In sum: Almost a century ago the College Board began to organize and convey colleges' skill needs to K-12 educators and potential college students. The restructuring American economy argues for adding employers as serious customers of the schools. Since the K-12 system is now ill-equipped and undisposed to attend to the skill implications of the economy, an analogue to the College Board, such as the proposed National Board on Workforce Skills, seems appropriate at this juncture in our national history.

The Board should be national in nature. Its focus should be the foundation and generic workplace skills required across occupations and industries. Its functions should include skill updating, level-setting, validating, and helping to establish lines of communication between employers, K-12 educators, and students.

Thank you for your attention. I will be glad to take any questions.



April 9, 1992

Jobs For The Future
1815 Massachusetts Ave.
Cambridge, MA 02140

Dear Sir/Madam:

I am writing to you to invite your active participation in the Department of Labor's efforts to ensure the continued competitiveness of American workers and businesses in the global marketplace. As we all know, American workers are the most productive in the world but in tomorrow's economy there will be an even greater reliance on the skills of the individual worker.

The Departments of Labor and Education are exploring several options for meeting this challenge, one of which is encouraging a partnership of business, labor, education, training providers, and federal, state and local governments to develop voluntary, industry-based skill standards and certification. Voluntary skill standards and certification can raise the quality of the workforce and improve the competitive position of the nation. For example,

- ▶ **Workers** can enhance their employment security through the attainment of nationally recognized skills certificates.
- ▶ **Employers** can reduce the cost of recruitment, increase the return on training investments and improve the accountability of training providers through adoption of industry-based standards.
- ▶ **Federal, state and local governments** can protect the integrity of public expenditures by tying employment-related training directly to industry standards.
- ▶ **Trainers and educators** can use skill standards to design and deliver relevant training.
- ▶ **Labor organizations** can use skill standards to increase their members' employment security and marketability through access to competency-based training and certification.

The first step in this process was the publication of an issues paper in the Federal Register on March 18, 1992. This notice seeks to identify the key issues for discussion and announce a series of public hearings to be held across the country during the month of April. Each of these hearings will be chaired by a Commissioner of the National Advisory Commission on Work-Based Learning.

I encourage you to join this partnership by reading the enclosed Federal Register notice, discussing it with your colleagues, presenting oral testimony and submitting written comments. Specific instructions regarding procedures for registering for the hearings and submitting written testimony can be found on pages 9488 and 9491 of the notice.

I have also enclosed an executive summary of the notice, a fact sheet on skill standards and information regarding the National Advisory Commission on Work-Based Learning. For more information on this initiative please contact Jim Van Erden, Administrator of the Office of Work-Based Learning, on (202) 535-0540.

Sincerely,



ROBERTS T. JONES
Assistant Secretary of Labor

Enclosures

federal register

**Wednesday
March 18, 1992**

Part III

**Department of Labor
Employment and Training Administration
Department of Education
Office of Vocational and Adult Education**

**Skill Standards and Certification Issues
Paper; Public Meetings; Notice**

245

DEPARTMENT OF LABOR**Employment and Training Administration****DEPARTMENT OF EDUCATION****Office of Vocational and Adult Education****Skill Standards and Certification Issues Paper; Public Meetings**

AGENCIES: Employment and Training Administration; Labor; and Office of Vocational and Adult Education.

ACTION: Request for comments; Notice of public meetings.

SUMMARY: The Employment and Training Administration (ETA) of the Department of Labor and the Office of Vocational and Adult Education (OVAE) of the Department of Education are announcing five public meetings to be held to provide interested parties opportunities to present their views to ETA, OVAE and the National Advisory Commission on Work-Based Learning (NACWBL) on issues related to the development of voluntary, industry-based skill standards and certifications. Written submissions on this topic are also being solicited.

The President charged the Departments of Labor and Education to jointly pursue this issue in response to the needs of business, workers, educators, training providers and governments. This mandate was officially conferred under America 2000, the President's education strategy. This notice is the first step in answering the President's charge and there will be further opportunities for public involvement in discussions on this issue.

DATES: The dates of the five public meetings are as follows:

- April 14, 1992 Boston, Massachusetts.
- April 21, 1992 Atlanta, Georgia.
- April 24, 1992 Chicago, Illinois.
- April 28, 1992 San Francisco, California.
- April 30, 1992 Washington, DC.

Persons desiring to present oral statements at a meeting must provide a notice of intent to appear, postmarked no later than seven calendar days before the date of the hearing.

Written statements from persons not presenting oral statements must be postmarked no later than May 29, 1992 and be sent to the U.S. Department of Labor Office of Work-Based Learning, Room N-4649, 200 Constitution Avenue NW., Washington, DC 20210 or to the U.S. Department of Education, Office of

Vocational and Adult Education, Division of National Programs, MES-4518, 330 C Street SW., Washington, DC 20202-7242.

ADDRESSES: The meetings are open to the public. The locations are shown below.

- April 14, 1992 Boston, Massachusetts, O'Neill Federal Building, Auditorium, 10 Causeway Street, Boston, Massachusetts 02222.
- April 21, 1992 Atlanta, Georgia, Georgia International Convention and Trade Center, Biltmore II, 1902 Sullivan Road, College Park, Georgia 30337.
- April 24, 1992 Chicago, Illinois, State of Illinois Building, room 9-040, 100 West Randolph Street, Chicago, Illinois 60601.
- April 28, 1992 San Francisco, California, ANA Hotel, Cabernet II, 50 Third Street, San Francisco, California 94103.
- April 30, 1992 Washington, DC, The Pullman Highland Hotel, 1914 Connecticut Avenue NW., Washington, DC 20009.

FOR FURTHER INFORMATION CONTACT: James Van Erden, Administrator, Office of Work-Based Learning, room N-4649, 200 Constitution Avenue NW., Washington, DC 20210 (Telephone: 202/535-0540) or Debra J. Nolan, Senior Program Advisor, Business and Education Standards, Division of Vocational and Adult Education, U.S. Department of Education, 330 C Street SW., Washington, DC 20202-7242 (Telephone: 202/732-2417).

SUPPLEMENTARY INFORMATION:**Background**

The need to improve the quality of information affecting employment-related choices is heightened by the changing economic environment in which the United States now competes. For decades, America has held the competitive advantage in the world marketplace on the basis of superior mass production. In today's economy, there is increased emphasis on quality, variety, customization, convenience and timeliness, placing greater importance on the skills of the individual front-line worker.

Nearly 85 percent of America's workforce for the year 2000 is in the workforce today and of that number, by some estimates, 25 million already need to update their skill or knowledge base to keep pace with the changing economy and technology. New entrants to the labor market will consist primarily of women and minorities, groups traditionally disadvantaged in the

workplace. These factors, combined with the fact that higher education levels will be required for many of our workers, only raise the importance of life-long learning for the American worker.

In 1990, at the National Education Summit the President and the nation's governors adopted six national education goals intended to close America's skills-and-knowledge gap. On April 18, 1991, the President introduced America 2000, a strategy for achieving these goals. This strategy is divided into four tracks with each track being tied to one or more of the six national education goals.

Track III of America 2000, serves National Education Goal Number Five, which reads, "Every adult American will be literate and will possess the knowledge and skills necessary to compete in a global economy and exercise the rights and responsibilities of citizenship." Adult Americans are challenged to go back to school and make this a nation of students. To enable them to meet this challenge, the Secretaries of Labor and Education are charged with spearheading a public-private partnership to help develop voluntary, industry-based skill standards for all industries.

As part of the overall strategy, Track III asks business and labor, "to adopt a strategy to establish job-related (and industry-specific) skill standards, built around core proficiencies, and to develop skill certificates to accompany these standards." The President reemphasized his concern for improving the quality of job training in the job Training 2000 initiative recently announced.

Voluntary, industry-based skill standards and certificates may be used to inform decision-making in all sectors of the economy. For example,

- Industries may use skill standards as a vehicle for informing training providers and prospective employees of skills required for employment;
- Employers may use the attainment of skill certification to reduce the costs and legal risks associated with the assessment of job candidates and make more objective employment decisions;
- Labor organizations may use skill standards to increase their members' employment security and marketability through access to competency-based training and certification;
- Workers may choose to obtain certification of their skills for many reasons, including: to help protect against dislocation, to pursue career advancement and to enhance their

ability to reenter the workforce by having a work portfolio based on training to industry standards:

- Training providers (colleges, high schools, vocational education institutions, private training bodies and companies, industry-based training and employers) may use skill standards to determine appropriate educational goals and objectives and training services to offer; and

- Government may use skill standards and competency-based outcomes to protect the integrity of public expenditures by requiring that employment-related training meet industry standards where they exist.

This notice of public hearings and request for comments is the first step in shaping this important tool for choice. In addition to this public dialogue, the Track III activities of the Departments of Labor and Education will be informed by research, the results of technical assistance and pilot projects, and the work of the National Advisory Commission on Work-Based Learning (NACWBL) and the Secretary of Labor's Commission on Achieving Necessary Skills (SCANS). SCANS, for example, has made some progress in identifying the generic skill requirements of the workplace which lay the foundation for the job-related, industry-specific skill standards addressed by the President.

Definition of Terms

Generally, a *job-related industry skill standard* is the identification of the knowledge, skill and level of ability needed to satisfactorily perform a given job. These standards may be specific to a given occupation, cross occupational lines or apply to groupings of occupations. This concept of skill standards can be tailored to any industry, to reflect its particular needs and economic environment.

Proficiency indicates the ability to perform the activities within an occupation to the set standard. It may incorporate the ability to apply the relevant skills and knowledge to new situations within the occupational area as well as generic skills.

Core proficiencies indicate capabilities for performing activities that are common across occupational areas and can be built upon during the course of a career.

Certification is the provision of a certificate or award to individuals, indicating the attainment of a skill, certain skills or knowledge, usually as a result of a competency-based assessment process.

Assessment is the process of measuring performance against a set of standards (through examination,

practical tests, performance observation and/or the completion of portfolios of work and assignments).

Existing Skill Standards and Certification

Some industries and professional and technical associations already offer employers and individuals better information than other industries and associations by developing skill standards and worker certification opportunities.

- By some estimates, 200 industry associations have systems of standards and certification in place to improve the skills of their members' employees, to increase the quality of choice for employers and employees and to provide quality assurance for customers.

- Professional and technical associations have developed processes for setting education and occupational entry standards and, in some cases, standards for skills maintenance which members must meet to continue to practice in a particular occupation. Individuals wanting to enter these occupations have clear roadmaps of the choices they must make to be able to qualify to work. Employers are able to choose among qualified individuals without the need for additional, expensive testing arrangements.

- National programs such as those developed by the construction industry and registered with the Department of Labor's Bureau of Apprenticeship and Training and the Federal Aviation Administration's competency requirements for aircraft frame technicians have been developed to provide national standards and quality assurance for employers. At the same time, individuals who may wish to seek a career in these areas can see what is required of them and make informed choices about enrolling in training programs.

The American Institute of Banking (AIB), the National Institute for Automotive Service Excellence (ASE) and the Printing Industries of America (PIA) are examples of industry associations that have established standards and certification processes. The AIB, for example, has initiated a voluntary certification program for mid-level occupations such as trust officer, compliance officer and security officer to respond to deregulation, interstate banking and the development of new products and services. ASE was founded to promote the highest standards of automotive service and, as part of its strategy for achieving that goal, administers competency-based assessments in nineteen specialty areas. PIA initiated a certification program,

PrintED, to respond to a nationwide shortage of skilled workers.

In a number of industries, joint labor-management bodies have guided the development of skill standards. For example, the Seafarers International Union and private ship owners jointly founded the Seafarer's School of Seamanship in Piney Point, Maryland. Detailed curricula have been designed for specific occupations, with promotion from one level to the next being determined by performance of practical job factors, behavior and traditional written examinations. In cooperation with the State of Maryland, the school also offers associate arts degrees in Marine Engineering and Nautical Science.

The Vocational-Technical Education Consortium of States (V-TECS) is notable as the largest system in the United States for converting job analysis information into curriculum objectives and vehicles for assessing student achievement.

Other organizations that have ongoing efforts to define and measure employability and workplace competencies include the National Occupational Competency Testing Institute (NOCTI), the Educational Testing Service (ETS), American College Testing Service (ACT), the American Society for Training and Development (ASTD), and the Secretary of Labor's Commission on Achieving Necessary Skills (SCANS).

Standards and certification processes have long been used by professional and technical associations to protect the consumer by assuring the competence of members. Doctors, engineers, lawyers, accountants and nurses are examples of professional and technical occupations for which standards have been developed to determine occupational competence. The standards used in these occupations set the requirements for certification of competence through licensing and promote consumer information and choice.

The Department of Labor's Bureau of Apprenticeship and Training approves standards for formal, industry-based apprenticeship programs where apprentices participate in training programs which combine class-room and job-site instruction. While the standards setting process is often time-based rather than competency-based, the apprenticeship model may offer useful experience in the development and use of skills within a national standards and certification framework.

Similarly, the Federal Aviation Administration has established minimum competency requirements for

technicians working on aircraft frames. Post-secondary programs that address the competencies can be certified by the FAA. Schools must offer a specific curriculum and attest to the competency of students at the completion of the program.

The military provides yet another example. In addition to their military mission, the armed forces (Army, Navy, Marine Corps and Air Force) are the largest training organizations in the United States. The Army offers employment and training in 32 occupational career fields, the Navy 24, the Marine Corps 36 and the Air Force 17. In each of the career fields, classroom, technical and work-based learning opportunities are available. Advancement is dependent upon occupational skill improvement; higher skills are clearly correlated with higher rank.

Key Issues

In order to proceed with the Track III directive on voluntary, industry-based skill standards and certification, four major issues must be raised for public comment and discussion that directly affect the development of an appropriate approach. These issues are:

1. What should be the guiding principles for the development of voluntary, industry-based skill standards in the context of the social, economic and political realities of the United States?
2. What will be the effect of voluntary, industry-based skill standards and certification on the decision-making processes of industry, organized labor, joint labor-management committees, individual firms and workers, educational institutions providing occupational, vocational and technical training and federal, state and local governments?
3. What are the appropriate roles and responsibilities of industry, labor organizations, joint labor-management committees, educators, community-based organizations and governments in the development, implementation, promotion, dissemination and maintenance of voluntary, industry-based skill standards and certification?
4. What processes should be followed in the development, implementation, promotion, dissemination and maintenance of voluntary, industry-based skill standards?

Each of these issues is presented below with a series of questions intended to begin a discussion of the most appropriate way to implement voluntary, industry-based skill standards. The list is not considered to be exhaustive, nor is it prioritized.

Issue #1

The first major issue is the identification of the principles which should guide the development of voluntary, industry-based skill standards in the context of the social economic and political realities of the United States.

Several meetings, briefings and roundtables were held during the summer of 1991 to discuss the issues related to skill standards and certification. As a result of these meetings, further research, discussions between the Departments of Labor and Education, meetings with industry associations and labor organizations and a wealth of commission reports and academic studies, it is suggested that the guiding principles of voluntary, industry-based skill standards be:

- Bench marked to world-class level of industry performance;
- Tied to measurable, performance-based outcomes that can be readily assessed;
- Based on broadly defined occupational categories within industries in order to promote a highly skilled and flexible work force;
- Comparable across industries, similar occupations, and states;
- Applicable to a wide variety of education and training service providers, both work- and school-based;
- Developed independently of any single training provider or type of training provider;
- Based on a relatively simple structure to make the system readily understandable for those who use it;
- Useful for qualifying new hires and for continuously upgrading the skills of employees;
- Free from and reduce gender, age, racial and any other form of bias or discriminatory practices; and
- Responsive to readily changing work organizations, technologies and market structure.

While this list is clearly not exhaustive, it is intended to identify the guiding principles and requirements of skill standards.

- Are these principles appropriate and sufficient to guide industry, education, labor organizations, and state and federal governments in the voluntary development of skill standards and certification?
- If not, what should be added, omitted or varied?

Issue #2

The second major issue posed is what would be the effect of voluntary, industry-based skill standards and certification on the decision-making

processes of industry, organized labor, educational and other institutions providing occupational, vocational or technical training, individual firms and workers and federal, state and local governments. For example, would skill standards and certification,

- Enable individuals, employers and governments to improve the quality of their training investment decisions by giving them a means of assessing the quality of training programs?
 - Provide workers with an identified career path?
 - Provide employers with objective hiring criteria?
 - Help workers to identify what skills are needed to perform a job and to evaluate their own grasp of those skills?
 - Assist labor organizations in representing the interests of their members with regards to career paths, compensation and ongoing skills training?
 - Provide a basis for specifying curricular objectives in educational institutions?
 - Ease the transition from school- to work-based learning, or from high school to post-secondary school?
 - Offer a means of recognizing skills obtained outside of the formal education system?
- And, if so, how?

Issue #3

The third major issue pertains to the particular designation of responsibilities in the development, implementation, promotion, dissemination and maintenance of skill standards and certification among the various stakeholders: industry, labor organizations, joint labor-management committees, educators, community-based organizations and federal, state and local governments.

- While each stakeholder is dependent upon the cooperation of all the others, who should take the lead and what are the specific roles of each stakeholder?
- What is an 'industry' and what are the appropriate criteria for deciding who represents 'industry'?
- Understanding that the responsibility for most education and training lies at the state and local level and in individual plants, establishments or larger firms, how should the need for local delivery be reconciled with the reality of national and international labor markets?
- What are the appropriate roles of federal, state and local governments in the development, implementation, promotion, dissemination and maintenance of skill standards and

certifications? What is the appropriate division of responsibilities among these levels of government?

Issue #4

The fourth major issue is the process for the development, implementation, dissemination and maintenance of voluntary industry-based skill standards.

- Is a national framework needed? If so, what should it look like? If not, how can consistency among industries, between industry and educators and within occupational groups which transcend industries be assured?
- Which structure will best guarantee the existing workforce access to the means for achieving the standards?
- Which structure will best insure that standards will quickly adapt to advances in technology, changes in the organization of work and other factors which will continue to evolve over time?
- Which structure will best facilitate the extensive and continuous collection and dissemination of information about skill standards which will be necessary?

Notice of Public Hearings and Request for Comment

To explore fully the above issues and any other issues which interested parties may wish to raise, the Departments of Labor and Education are requesting public comment on issues related to the development of voluntary industry-based skill standards and certifications.

Written statements from persons not presenting oral statements or persons wishing to comment on issues raised in the following paper should submit such comment to the Department of Labor, Office of Work-Based Learning, room N-4649, U.S. Department of Labor, 200 Constitution Avenue NW., Washington, DC 20210 or to the U.S. Department of Education, Office of Vocational and Adult Education, Division of National Programs, MES-4518, U.S. Department of Education, 330 C Street SW., Washington, DC 20202-7242.

Oral comments may be presented at a series of five public meetings that will be convened by the Departments of Labor and Education and in cooperation with the National Advisory Commission on Work-Based Learning.

Locations and Dates

The meeting locations and dates are as follows:

- April 14, 1992 Boston, Massachusetts, O'Neill Federal Building, Auditorium, 10 Causeway Street, Boston, Massachusetts 02222.
- April 21, 1992 Atlanta, Georgia, Georgia International Convention and Trade Center, Biltmore II, 1902 Sullivan Road, College Park, Georgia 30337.
- April 24, 1992 Chicago, Illinois, State of Illinois Building, room 9-040, 100 West Randolph Street, Chicago, Illinois 60601.
- April 28, 1992 San Francisco, California, ANA Hotel, Cabernet II, 50 Third Street, San Francisco, California 94103.
- April 30, 1992 Washington, DC, The Pullman Highland Hotel, 1914 Connecticut Avenue, NW., Washington, DC 20009.

The meetings will commence at 9 a.m. and adjourn at 4 p.m. There will be a lunch break from 12 p.m. to 1 p.m. The meetings will be open to the public.

Participation of Interested Parties

An opportunity to present oral statements concerning the issues raised above will be provided at these public meetings. Notices of intent to present oral statements must be postmarked seven calendar days before the date of the hearing and must be mailed to the appropriate Department of Labor regional office. Notice of intent to present oral statements in Boston should be sent to: Holly O'Brien, U.S. Department of Labor, Employment and Training Administration, One Congress Street, Boston, Massachusetts 02203.

Notices of intent to present oral statements in Atlanta should be sent to: Mary Smarr, U.S. Department of Labor, Employment and Training Administration, 1375 Peachtree Street, NE., Atlanta, Georgia, 30367.

Notices of intent to present oral statements in Chicago should be sent to: Louis Gibert, U.S. Department of Labor, Employment and Training Administration, 230 South Dearborn Street, Chicago, Illinois, 60604.

Notices of intent to present oral statements in San Francisco should be sent to: Jeff Salzman, U.S. Department of Labor, Employment and Training Administration, 71 Stevenson Street, San Francisco, California, 94105.

Notices of intent to present oral statements in Washington, DC, should be sent to: Mae Brown, U.S. Department of Labor, Employment and Training Administration/OWBL, room N-4649, 200 Constitution Avenue, NW., Washington, DC 20210.

The notice of intent must contain the following information:

- (1) The name, title, address and telephone number of each person to appear;
- (2) Affiliation;
- (3) The issues and/or concerns that will be addressed.

Individuals who do not register in advance will be permitted to register and speak at the meeting, in order of registration, subject to scheduling constraints. Speakers should plan to limit their comments to five minutes; longer presentations will be allowed if time permits. While it is anticipated that all persons desiring to speak will have an opportunity to do so, time constraints may not allow this to occur. However, all written statements will be accepted and incorporated into the public record. The Departments of Labor and Education, in consultation with the National Advisory Commission on Work-Based Learning will make the final determination on selection and scheduling of speakers.

The public hearings will be audiotaped and transcribed.

Meeting Procedures and Objectives

A Commissioner of the National Advisory Commission on Work-Based Learning will preside at each of the five meetings. The Commissioner will:

1. Regulate the course of the meeting including the order of appearance of persons presenting oral statements;
2. Dispose of procedural matters;
3. Confine the presentations to matters pertinent to the purpose of the implementation of voluntary, industry-based skill standards and certification.

Signed in Washington, DC, on this 9th day of March.

Roberts T. Jones,

Assistant Secretary for Employment and Training.

Betsy Brand,

Assistant Secretary for Vocational and Adult Education.

[FR Doc. 92-5932 Filed 3-17-92; 8:45 am]

BILLING CODES 4510-26-01, 4000-01-01

Federal Register Notice on Skills Standards and Certification

This notice was prepared by the Department of Labor, in cooperation with the Department of Education, as part of its plan for advancing the President's education strategy outlined in Track III of **America 2000**. In that document, the Departments of Labor and Education are asked to spearhead a public-private partnership to develop voluntary, industry-based standards for all industries. Specifically, Track III asks business and labor, "to adopt a strategy to establish job-related (and industry-specific) skill standards, built around core proficiencies, and to develop skill certificates to accompany these standards."

This work is also related to **Job Training 2000**. In designing a world-class job training system, **Job Training 2000** relies on four basic principles, one of which is, "ensuring high standards of accountability and incentives for quality job training services." A framework of voluntary, industry-based skill standards and certification may provide such accountability and incentives.

This notice has three objectives. First, it provides background on voluntary, industry-based skill standards and certification. This includes a discussion of the United States economic outlook, **America 2000** and a summary of existing standards and certification.

Second, it organizes the major issues into four key areas:

1. What should be the **underlying principles** for the development of voluntary, industry-based skill standards in the context of our social, economic and political realities?
2. What will be the **effect** of voluntary, industry-based skill standards and certification on the **decision-making processes** of the various stakeholders: industry, labor organizations, joint labor-management committees, educators, community-based organizations and governments?
3. What are the **appropriate roles and responsibilities** of these stakeholders in the development, implementation and maintenance of voluntary skill standards and certification?
4. What **process** should be followed in the development, implementation and maintenance of voluntary industry-based skill standards?

Third, it initiates a public dialogue through a request for comment on these four areas and the announcement of a series of five public hearings to be convened by the Departments of Labor and Education and chaired by the National Advisory Commission on Work-Based Learning.

**SKILL STANDARDS AND CERTIFICATION
IMPACT STATEMENT**

Voluntary skill standards and certification can raise the quality of the workforce and improve the competitive position of the nation. Linking public and private training dollars to specific industry standards can foster productivity and efficiency for workers, employers, governments, trainers and educators, and unions alike.

Millions of workers already in the labor force need the opportunity to update their skills to keep pace with economic and technological change.

- * Workers can safeguard their own employment security through accredited, portable skills that enable continued employment independent of economic conditions affecting any one industry.
- * Employers can reduce the cost of recruitment, increase the return on training investments and improve the accountability of training providers through adoption of industry-based standards.
- * Federal, state and local governments can protect the integrity of public expenditures by tying employment-related training directly to industry standards.
- * Trainers and educators can use skill standards and certificates to design and deliver relevant training to employers, employees and government clients.
- * Labor unions can assist their members in choosing training options related to specific industries and wider labor market needs.

NATIONAL ADVISORY COMMISSION ON WORK-BASED LEARNING

Purpose

The National Advisory Commission on Work-Based Learning was established October 1990 to provide ongoing advice to the Secretary of Labor on ways to increase the skill levels of the American workforce.

Findings

During its first year, the Commission has found that:

- increasing workers' skills alone will not necessarily lead to improvements in productivity; companies must develop new "quality systems" to fully utilize those skills
- these two elements -- the skills of the workforce and the development of "quality systems" to make full use of those skills -- are the key to the competitiveness puzzle
- corporate strategies that focus on just one factor -- skills, technology, or organizational culture and systems -- produce only limited results; it is the integration of these factors through "quality systems" that leads to significant increases in productivity
- "work-based learning" is the process that integrates these factors
- the productivity gains from work-based learning are greater than the gains achieved from investments in capital or formal education prior to work
- the country that successfully capitalizes on the potential of work-based learning will achieve a competitive advantage.

Commission Membership

The Commission consists of executive-level representatives from business, labor, government, education, and community-based organizations. Its chairman is Jack MacAllister, Chairman of the Board of U S WEST, Inc.

Activity of the Commission

The Commission's focus is on making change. To that end, the Commission is developing strategic action steps for the Department of Labor to undertake in the following six areas:

- Developing a National Framework of Skill Standards and Certification
- Integrating Human Resources Development and the Introduction of New Technology
- Promoting Labor-Management Cooperative Efforts to Implement Work-Based Learning
- Developing New Human Resource Accounting Models that Promote Investment in People
- Managing Cultural Diversity as a Corporate Strategic Asset
- Developing a National Award for Quality Human Resource Management Systems

For more information call:
Peter Carlson, Managing Director
National Advisory Commission on Work-Based Learning
202/523-8271

ADVISORY COMMISSION ON WORK-BASED LEARNING

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SKILL STANDARDS AND CERTIFICATION
A Fact Sheet for Action

VOLUNTARY, INDUSTRY-BASED SKILL STANDARDS: What Are They?: Generally, they are job-related and industry-specific. They identify the knowledge, skill and level of ability needed to perform a given job. Voluntary standards can be tailored to any industry to reflect its particular needs and economic environment. For example, in order to obtain a certification in graphic arts from the Printing Industries of America, a person must actually produce a correctly exposed and processed metal plate for offset printing. It is a matter of choice, however, whether the employer requires certification or the artist seeks to obtain it.

In America 2000, President Bush asked business and labor to "adopt a strategy to establish job-related (and industry-specific) skill standards, built around core proficiencies, and to develop skill certificates to accompany these standards." Concurrently, the issues of voluntary, industry-based skill standards and competency-based assessment has surfaced in

discussions among representatives of industry, labor and education. In Job Training 2000, the redesign of the U.S. job training system relies on four basic principles, one of which is, "ensuring high standards of accountability and incentives for quality job training services." A framework of voluntary, industry-based skill standards and certification can provide such accountability and incentives.

SKILL STANDARDS AND CERTIFICATION: VALUE AND USE

Skill standards define the skills needed for successful job performance certificates. They may be used to inform decision-making in all sectors of the economy. For example,

- ▶ **Industry** may use skill standards as a vehicle for informing training providers and prospective employees of skills required for employment;
- ▶ **Employers** may use the attainment of skill certification to reduce the costs and legal risks associated with the assessment of job candidates and make more objective employment decisions;
- ▶ **Labor organizations** may use skill standards to increase their members' employment security through access to competency-based training and certification;

- ▶ **Workers** may choose to obtain certification of their skills for many reasons, including: to protect against dislocation, to pursue career advancement and to enhance their ability to reenter the workforce by having a work portfolio based on training to industry standards;
- ▶ **Trainers and educators** may use skill standards to determine appropriate training services to offer; and
- ▶ **Government** may use skill standards and competency-based outcomes to protect the integrity of public expenditures by requiring that employment-related training meet industry standards where they exist.

For decades, America has held the competitive advantage in the world marketplace on the basis of superior mass production. In today's economy, there is increased emphasis on quality, variety, customization, convenience and timeliness, placing greater emphasis on the skills of the individual front-line worker. While it is important to prepare new entrants to the workforce, nearly 85 percent of America's workforce for the year 2000 is in the workforce today and of that number, an estimated 25 million need to update their skills to keep pace with the changing economy and technology.

FEDERAL GOVERNMENT ROLE

The federal government, through the Departments of Labor and Education and with the advice of the Secretary of Labor's National Advisory Commission on Work-Based Learning, will be a catalyst for action in the exploration of voluntary, industry-based skill standards and certification. The action plan utilizes a four-part approach that calls for the Departments and the Commission to: (1) develop a partnership with key players in industry, labor, education, state and local government, and community-based organizations; (2) conduct pilot projects to develop standards; (3) conduct and disseminate research and technical assistance and (4) provide coordination and leadership in encouraging and informing the debate.

These actions will help achieve the President's mandate to guarantee that every adult American will possess the knowledge and skills necessary to compete in a global economy. They will support the development of nationally and internationally recognized skill credentials for individual workers, provide justification for the investment of publicly funded training, enhance labor and training market efficiency and foster the continued competitiveness of American industry.



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U.S. LAUNCHES NATIONAL DEBATE ON VOLUNTARY STANDARDS FOR WORKERS

Secretary of Labor Lynn Martin announced today a joint Department of Labor and Department of Education effort focused on the creation of voluntary, industry-based skill standards and certification to help American workers compete more successfully in the global marketplace.

Public hearings will be held around the country in April to solicit comments from American workers, employers, labor unions and others on a proposal to improve the upward mobility and earning power of American workers through the development of occupational standards and a certification process.

"We know that American workers are the most productive in the world," Martin said. "But the demands of today's rapidly changing economy require higher skill levels for us all. Voluntary, industry-based skill standards would support the development of a more highly skilled and flexible workforce.

"Skill standards and certification are part of an overall strategy to enhance the job security of America's working men and women. Today's global economy requires that Americans be flexible and be able to match their skills to changing technology. What we are seeking to create will help Americans meet these demands," Martin said.

The proposed voluntary, industry-based skill standards are job-related and industry-specific. They identify the knowledge, skill and level of ability needed to perform a given job.

Today's announcement grows out of President Bush's twin strategies, America 2000 and Job Training 2000, intended to address the education and training needs of the nation.

America 2000 directs the Departments of Labor and Education to spearhead a private-public partnership to help develop

(more)

voluntary, industry-based skill standards for all industries. Track III of America 2000 calls for "every adult American to be literate and to possess the knowledge and skills necessary to compete in a global economy."

Job Training 2000, announced in January of this year, envisions a comprehensive federal job training system designed to meet the nation's workforce needs into the twenty-first century.

Martin noted that other nations have industry-based skill standards. For example, Germany's apprenticeship system provides nationally recognized skill credentials supported by employers, employees and educators. Martin said it is vital that American workers also have a national system to ensure their job security, wage base and competitive advantage.

The U.S. discussion of voluntary, industry-based standards will focus on a series of five hearings around the country between April 14-30.

Convened by both the Labor and Education Departments, the hearings will take place on April 14 in Boston, Mass.; on April 21 in Atlanta, Ga.; on April 24 in Chicago, Ill.; on April 28 in San Francisco, Calif.; and on April 30 in Washington, D.C.

The hearings will be chaired by a Commissioner of the National Advisory Commission on Work-Based Learning. The Commission, which reports to the Secretary of Labor, includes representatives of business, education and organized labor.

An announcement of the hearings and an issues paper inviting public comment was published yesterday in the Federal Register.

The Federal Register notice invites comment on four major issues:

- What should be the guiding principles for the development of voluntary, industry-based skill standards?
- What will be the effect of voluntary, industry-based skill standards and certification on those involved including industry, labor, education, government and others?
- What are the appropriate roles and responsibilities of each group in the development, implementation, promotion and maintenance of skill standards and certification?
- What process should be followed in the development, implementation, promotion and maintenance of voluntary, industry-based skill standards?

(more)

Martin emphasized that voluntary skills standards would serve as a tool not only for industry and employers but also for labor organizations, workers, educators, trainers and federal, state and local governments. For example:

- Industry may use skill standards as a vehicle for informing training providers and prospective employees of skills required for employment;
- Employers may use the attainment of skill certification to reduce the costs and legal risks associated with the assessment of job candidates and make more objective employment decisions;
- Labor organizations may use skill standards to increase their members' employment security through access to competency-based training and certification;
- Workers may choose to obtain certifications of their skills to protect against dislocation, to pursue career advancement and to enhance their ability to reenter the workforce;
- Training providers and educators may use skill standards to determine appropriate training services to offer; and
- Government may use skill standards and competency-based outcomes to protect the integrity of public expenditures by requiring that employment-related training meet industry standards where they exist.

It is estimated that 200 industry associations already have systems of standards in place. Among them are the American Institute of Banking, the National Institute for Automotive Excellence and the Printing Industries of America.

Individuals who wish to testify at the public hearings or submit written statements in response to the Federal Register notice should contact the Office of Work-Based Learning, U.S. Department of Labor, Washington, D.C. 20210.

#

102D CONGRESS
1ST SESSION

S. 1790

IN THE SENATE OF THE UNITED STATES

Mr. KENNEDY (for himself and Mr. FLATFIELD) introduced the following bill:
which was read twice and referred to the Committee on _____

A BILL

To enhance America's global competitiveness by fostering a high skills, high quality, high performance workforce, and for other purposes.

1 *Be it enacted by the Senate and House of Representa-*
2 *tives of the United States of America in Congress assembled,*

3 **SECTION 1. SHORT TITLE AND TABLE OF CONTENTS.**

4 (a) **SHORT TITLE.**—This Act may be cited as the
5 "High Skills, Competitive Workforce Act of 1991".

6 (b) **TABLE OF CONTENTS.**—The table of contents is
7 as follows:

- Sec. 1. Short title and table of contents.
- Sec. 2. Definitions

TITLE I—FINDINGS AND NATIONAL POLICY

- Sec. 101 Findings.
- Sec. 102. Purpose and national policy declarations.

TITLE II—STANDARDS OF EXCELLENCE IN EDUCATION AND TRAINING

- Sec 201 Purpose
- Sec 202 Professional and technical standards for occupational training
- Sec. 203. Educational standards and assessments.
- Sec. 204. Information on education and training programs.

TITLE III—SCHOOL-TO-WORK TRANSITION

- Sec. 301. Findings and purpose.

Subtitle A—Career Preparation

- Sec. 311. Career preparation.

Subtitle B—Community Youth Employment Compacts

- Sec 321. Community Youth Employment Compacts.

Subtitle C—Youth Opportunity Centers

- Sec. 331. Youth Opportunity Centers.

Subtitle D—Technology Education and Partnership Programs

- Sec. 341. Purpose.
- Sec. 342. Technology education.
- Sec. 343. College and company technology partnerships.
- Sec. 344. Grants for development of new training technologies.

TITLE IV—HIGH PERFORMANCE WORK ORGANIZATION

- Sec. 401. Findings and purpose.
- Sec. 402. High performance work organization.
- Sec. 403. Malcolm Baldrige National Quality Award.

TITLE V—HIGH SKILLS TRAINING CONSORTIA

- Sec. 501. High skills training consortia.
- Sec. 502. Application to antitrust laws
- Sec. 503. Antitrust limitation on recovery.
- Sec. 504. Antitrust attorney's fees.
- Sec. 505. Disclosure of high skills training consortia.
- Sec. 506. Authorization of appropriations.

TITLE VI—STATE AND REGIONAL EMPLOYMENT AND TRAINING SYSTEMS

- Sec. 601. Start up grants for State and regional employment and training systems.
- Sec. 602. Study on Federal employment and training programs.

1 SEC. 2. DEFINITIONS.

2 As used in this Act:

1 (2) RELOCATION.—None of the amounts appro-
2 priated under this Act (or the amendments made by
3 this Act) may be used by States to attract or induce
4 existing businesses or their subsidiary units to relo-
5 cate from another State, or to engage in bidding for
6 proposed businesses or their subsidiary units.

7 **TITLE II—STANDARDS OF EX-**
8 **CELLENCE IN EDUCATION**
9 **AND TRAINING**

10 SEC. 201. PURPOSE.

11 It is the purpose of this title to—

12 (1) stimulate the adoption of a voluntary na-
13 tional system of industry-based, occupational stand-
14 ards and certifications of mastery;

15 (2) authorize the Office of Educational Re-
16 search and Improvement to conduct research con-
17 cerning the assessment of academic achievements
18 and to carry out pilot projects for assessments in
19 specific subject areas; and

20 (3) require the public release of independently
21 audited information concerning education and train-
22 ing programs.

1 SEC. 202. PROFESSIONAL AND TECHNICAL STANDARDS
2 FOR OCCUPATIONAL TRAINING.

3 (a) PURPOSE.—Recognizing that a high skills, high
4 quality, high performance workforce requires that high
5 caliber standards must be established and met, it is the
6 purpose of this section to stimulate the adoption of a vol-
7 untary national system of occupational certification by es-
8 tablishing an independent national board to develop a sys-
9 tem of industry-based, occupational proficiency standards
10 and certifications of mastery for occupations within each
11 major industry and occupations that involve more than
12 one industry, for which no recognized standards currently
13 exist.

14 (b) ESTABLISHMENT OF NATIONAL BOARD.—There
15 is established a National Board for Professional and Tech-
16 nical Standards (hereafter referred to in this section as
17 the “National Board”).

18 (c) COMPOSITION.—

19 (1) IN GENERAL.—The National Board shall be
20 composed of 24 members appointed in accordance
21 with paragraph (2)(A), representing business and in-
22 dustry, labor organization, educational institutions,
23 technical associations, and others whose expertise re-
24 flects a broad cross section of industries and occupa-
25 tions, and two ex officio members in accordance with
26 paragraph (2)(B). Representatives of labor organiza-

1 tion shall be selected from among individuals recom-
2 mended by recognized national labor organizations.

3 (2) MEMBERSHIP.—

4 (A) APPOINTMENTS.—Members of the Na-
5 tional Board shall be appointed as follows:

6 (i) Six members (three from each
7 major political party) shall be appointed by
8 the Speaker of the House of Representa-
9 tives, upon the recommendations of the
10 Majority and Minority Leaders of the
11 House, respectively.

12 (ii) Six members (three from each
13 major political party) shall be appointed by
14 the President Pro Tempore of the Senate,
15 upon the recommendations of the Majority
16 and Minority Leaders of the Senate, re-
17 spectively.

18 (iii) Six members shall be appointed
19 by the Secretary of Labor.

20 (iv) Six members shall be appointed
21 by the Secretary of Education.

22 (B) EX OFFICIO MEMBERS.—The Secre-
23 tary of Labor and the Secretary of Education
24 shall serve as ex officio members of the Nation-
25 al Board.

1 (3) TERM.—Each member of the National
2 Board shall be appointed under paragraph (2)(A)
3 for a term of 3 years, except that of the initial mem-
4 bers of the Board appointed under such
5 paragraph—

6 (A) eight shall be appointed for a term of
7 1 year, of which two such members shall be
8 from each class of appointees under each of the
9 clauses (i) through (iv) of such paragraph;

10 (B) eight shall be appointed for a term of
11 2 years, of which two such members shall be
12 from each class of appointees under each of the
13 clauses (i) through (iv) of such paragraph; and

14 (C) eight shall be appointed for a term of
15 3 years, of which two such members shall be
16 from each class of appointees under each of the
17 clauses (i) through (iv) of such paragraph.

18 (d) CHAIRPERSON AND VICE CHAIRPERSON.—The
19 National Board shall annually elect a Chairperson and
20 Vice Chairperson from among its members appointed
21 under subsection (c)(2)(A), each of whom shall serve for
22 a term of 1 year.

23 (e) COMPENSATION AND EXPENSES.—

24 (1) COMPENSATION.—Members of the National
25 Board who are not regular full-time employees of the

1 United States government shall serve without com-
2 pensation.

3 (2) EXPENSES.—While away from their homes
4 or regular places of business on the business of the
5 National Board, members of such Board may be al-
6 lowed travel expenses, including per diem in lieu of
7 subsistence, as is authorized under section 5703 of
8 title 5, United States Code, for persons employed
9 intermittently in the Government service.

10 (f) STAFF.—The National Board shall appoint an
11 Executive Director who shall be compensated at a rate de-
12 termined by the Board that shall not exceed that under
13 level 15 of the general schedules under title 5, United
14 States Code, and who may appoint such staff as is neces-
15 sary.

16 (g) INDUSTRY COMMITTEES.—

17 (1) ESTABLISHMENT.—The National Board
18 shall establish advisory committees for each major
19 industry and for major occupations that involve
20 more than one industry, and shall appoint individ-
21 uals to serve as members of such committees from
22 among nominations submitted by each such indus-
23 try. Each such committee shall include members se-
24 lected from among individuals nominated by recog-

1 nized national labor organizations representing em-
2 ployees in such industry or occupation.

3 (2) DUTIES.—Committees established under
4 paragraph (1) shall, for each industry or occupation
5 for which such committee is established—

6 (A) develop recommendations for proficien-
7 cy standards for occupations within such indus-
8 try that are linked to internationally accepted
9 standards, to the extent practicable;

10 (B) develop assessments to measure com-
11 petencies for such occupations;

12 (C) develop and recommend 2- to 5-year
13 curricula for achieving such competencies that
14 include structured work experiences and related
15 study programs leading to technical and profes-
16 sional certificates or associate degrees; and

17 (D) evaluate the implementation of the
18 standards, assessments, and curricula developed
19 under this paragraph to make recommendations
20 for their revision, where appropriate.

21 (3) LIMITATION.—No committee established
22 pursuant to this section shall be authorized to devel-
23 op standards, assessments or curricula for any occu-
24 pation or trade for which recognized apprenticeship
25 standards exist.

1 (4) DEADLINES.—

2 (A) IN GENERAL.—Not later than Decem-
3 ber 31, 1993, the National Board shall have
4 identified at least 20 occupational categories
5 and developed recommendations for occupation-
6 al standards, curricula, and certifications for
7 such occupations.

8 (B) COMPLETION OF CATEGORIES.—The
9 National Board shall develop a program to en-
10 sure that the standards, curricula, and certifica-
11 tions for all remaining identified occupational
12 categories are completed not later than January
13 1, 2000.

14 (5) ATTAINMENT OF STANDARDS.—Occupation-
15 al proficiency standards developed under paragraph
16 (2) should be applied in a manner such that the at-
17 tainment of such standards is likely to meet the re-
18 quirements for transferable credit and enable a stu-
19 dent to continue his or her education, with a special
20 emphasis on transferability among States.

21 (6) AVAILABILITY.— The occupational stand-
22 ards, curricula, and certification systems developed
23 in accordance with paragraph (2) for an industry or
24 occupation shall be made available for voluntary use
25 by institutions of postsecondary education offering

1 professional and technical education, labor organiza-
2 tions, trade and technical associations, employers
3 providing formalized training, and any other organi-
4 zations likely to benefit from such systems.

5 (h) AUTHORIZATION OF APPROPRIATIONS.—

6 (1) IN GENERAL.—There are authorized to be
7 appropriated to carry out this section, \$15,000,000
8 for fiscal year 1993, and such sums as may be nec-
9 essary for each of the fiscal years 1994 through
10 1997.

11 (2) AVAILABILITY.—Amounts appropriated
12 under paragraph (1) shall remain available until ex-
13 pended.

14 SEC. 203. EDUCATIONAL STANDARDS AND ASSESSMENTS.

15 (a) POLICIES.—Section 405(a)(2) of the General
16 Education Provisions Act (20 U.S.C. 1221e(a)(2)) is
17 amended—

18 (1) in subparagraph (F), by striking out “and”
19 at the end thereof;

20 (2) in subparagraph (G), by striking out the pe-
21 riod and inserting in lieu thereof “; and”; and

22 (3) by adding at the end thereof the following
23 new subparagraph:

1 “(H) encourage and promote research relative
2 to internationally competitive standards in academic
3 achievement.”.

4 (b) RESEARCH AND DEVELOPMENT NEEDS.—Sec-
5 tion 405(b)(3) of such Act (20 U.S.C. 1221e(b)(3)) is
6 amended—

7 (1) in subparagraph (H), by striking out “and”
8 at the end thereof;

9 (2) in subparagraph (I), by striking out the pe-
10 riod; and

11 (3) by adding at the end thereof the following:

12 “(J) conducting research into the development
13 of a system of academic achievement and proficiency
14 standards in specific subjects at appropriate age/
15 grade levels;

16 “(K) conducting research into the development
17 of curricula that are designed to facilitate the attain-
18 ment of academic achievement in specific subject
19 areas; and

20 “(L) developing multiple assessment tools, such
21 as performance or proficiency assessments, assess-
22 ments of student projects and assessments of the
23 contents of a portfolio of student work in and across
24 specific subject areas.

25 “For purposes of subparagraph (L)—

1 “(i) the term ‘student projects’ means extended
2 participation in learning through planning and car-
3 rying out an applied learning activity; and

4 “(ii) the term ‘portfolio of student work’ means
5 a collection of student products which demonstrate
6 a command of knowledge or skill.”.

7 (c) ASSESSMENT PILOT PROJECTS.—Section 405(d)
8 of such Act (20 U.S.C. 1221e(d)) is amended by adding
9 at the end thereof the following new paragraph:

10 “(7)(A) The Secretary, from funds appropriated
11 under this section, may award grants to entities otherwise
12 eligible to receive funds under this Act, including State
13 educational agencies and consortia of such agencies, for
14 pilot projects to design, develop and evaluate Statewide
15 or multi-State assessment systems for elementary school,
16 middle school and high school students leading towards
17 an assessment system that will be able to assist both edu-
18 cators and policymakers to improve instruction and ad-
19 vance student learning.

20 “(B) A Statewide or multi-State assessment system
21 designed and developed with amounts received under this
22 paragraph shall—

23 “(i) utilize widely agreed upon high standards
24 that all students should be expected to meet;

- 1 “(ii) consist of multiple components,
2 including—
3 “(I) performance assessments;
4 “(II) assessments of student projects; and
5 “(III) assessments of the contents of a
6 portfolio of student work in specific subject
7 areas and across subject areas;
8 “(iii) not be used to compare students, but
9 rather to determine whether students have met the
10 agreed upon standards of proficiency;
11 “(iv) encourage flexibility for students in attain-
12 ing and demonstrating competence, recognizing that
13 multiple forms of excellence exist; and
14 “(v) include a plan to assist all students in
15 meeting the standards described in clause (i)
16 through measures such as—
17 “(I) financial or other assistance and in-
18 centives to schools to improve student perform-
19 ance; and
20 “(II) staff development activities to assist
21 staff in adapting curricula and teaching tech-
22 niques to the needs of students of varying back-
23 grounds.
24 “(C) A recipient of a grant under this paragraph
25 shall include a broad participation of State and local edu-

1 cation officials, business and community leaders, teachers,
2 parents and subject specialty organizations in the develop-
3 ment of standards for mathematics, science, English, his-
4 tory, geography, civics and government, foreign languages,
5 and the arts.

6 “(D) The Secretary shall ensure that the findings de-
7 rived from evaluations of the assessment pilot projects
8 under this paragraph are widely disseminated.

9 “(E)(i) There are authorized to be appropriated to
10 carry out the pilot projects described in this paragraph,
11 \$15,000,000 for fiscal year 1993, and such sums as may
12 be necessary for each of the fiscal years 1994 through
13 1997. No amounts appropriated under this subparagraph
14 may be obligated prior to publication of the final report
15 of the National Council on Education Standards and Test-
16 ing (established by Public Law 102-62).

17 “(ii) Amounts appropriated under clause (i) shall re-
18 main available until expended.”

19 **SEC. 204. INFORMATION ON EDUCATION AND TRAINING**
20 **PROGRAMS.**

21 Section 487(a) of the Higher Education Act of 1965
22 (20 U.S.C. 1094(a)) is amended by adding at the end
23 thereof the following new paragraph:

24 “(13) The institution certifies that information
25 (that has been confirmed by independent audit) shall

1 be released to the public concerning programs of-
2 fered by the institution, the number of students en-
3 rolled in each such program, the costs to the stu-
4 dents of such programs, the characteristics of stu-
5 dents participating in each such program, the stu-
6 dent completion rate for each such program, and
7 other outcomes, including, where appropriate, job
8 placement rates and the employment status of pro-
9 gram graduates for the 2-year period following the
10 completion of studies.”

11 **TITLE III—SCHOOL-TO-WORK** 12 **TRANSITION**

13 **SEC. 301. FINDINGS AND PURPOSE.**

14 (a) **FINDINGS.**—Congress finds that—

15 (1) as workplace demands increase for better
16 educated and skilled workers, many young Ameri-
17 cans are finding it increasingly difficult to make an
18 effective transition from school to work;

19 (2) while this is especially true for those with-
20 out a high school diploma, it also applies to those
21 who have only a high school diploma and to those
22 who have some college credit, but do not have a bac-
23 calaureate degree;