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Editors

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7

International Perspectives on Teachers and Lecturers in Technical and Vocational Education



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International Perspectives on Teachers and Lecturers in Technical and Vocational Education

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Introduction by the Series Editors

The qualifications of skilled workers is a key issue for the competitiveness of companies and economies, all over the world. The skills and knowledge of the workforce are a result of learning processes, taking place in formal and non-formal settings. Those processes involve a variety of teachers, trainers, and instructors, whose task it is to support and direct individuals in the vocational learning process.

Even though the share of the workforce drawing on this support can be estimated as being about two-thirds, worldwide it is regrettable that there is still a lack of recognition and status of this significant work. The staff in TVET not only directly influence the quality of the workforce but also take over additional societal functions, such as the support of regional learning and innovation processes and the social integration of disadvantaged groups into work and the labour market. Despite this importance, knowledge about this key occupational group, on an international accessible and comparable basis, is extremely scarce. The last comparative study on profiles and education of TVET teachers dates back some thirty years (UNESCO, 1973: Bristol, John Wiley and Sons). As a result, this volume on ‘International Perspectives on Teachers and Lecturers in Technical and Vocational Education’ is long overdue, and a very timely addition to the UNEVOC Book Series on TVET.

This volume provides insights into the great variety of ways in which three tasks – supporting innovation, learning and social integration – are distributed over different institutions and different profiles of teaching and learning support, across a well-selected range of countries; and this study also illustrates that the problems teachers and trainers have in solving their everyday-work problems and difficulties are very similar across nations and between different learning traditions and environments.

As much as this variety provides a rich pool of experiences, with different configurations of mechanisms to support integration into the workforce and the acquisition of skills and knowledge, it also challenges the international exchange and transfer of those experiences. From this perspective, the richness turns into a hindrance for trans-national discourse and transfer.

In order to address such difficulties, UNESCO-UNEVOC has initiated a range of activities to overcome the fragmentation resulting from this process. The co-operation between TVET teacher educators from different regions on the world, within the United Network on Innovation and Professional Development in TVET (UNIP) which the UNESCO-UNEVOC International helped to establish, is only one such support, albeit an important one. Within the UNIP activity, TVET teacher educators are working on a joint international framework for Master degrees in TVET.

As joint-editors of this UNESCO-UNEVOC International Book Series on TVET, we very much hope that the books published in this series (and this volume in particular), will prove to be helpful in assisting researches, policy makers and practitioners obtain an insight into the dialectic between the global and the local as regards to vocational teachers' education and practice. In addition it is our fervent wish that these volumes will contribute to the establishment of a fruitful, reflective and professional international discourse on the challenges faced by TVET educators in research, policy and practice.

Rupert Maclean, Director of the UNESCO-UNEVOC International Centre,
Bonn, Germany;

and

David N. Wilson, Professor Emeritus at OISE, University of Toronto,
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* * *

UNEVOC/5 September 2006

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Preface

This book provides an insight into the history and current professional situation as well as the practice of vocational teaching across a number of selected countries.

As often occurs in comparative studies there is no ultimate wisdom behind the selection of countries, but we hope that we have achieved the gathering of a critical mass of countries, which build a contrastive sample for what currently happens in the field.

Despite the fact that a more problem-based approach to the comparison of various aspects of vocational teachers' professional situation would be more exciting to the reader at the first glance, we decided to take this country-based descriptive approach when making this book. The reason for that is that there is still a fundamental lack of information when it comes to vocational teachers on an international scale. So any more in-depth study into one of the sub-aspects of vocational teaching is not really possible at the moment, since the contextual information is missing.

The more substantial volumes on the topic on the international level date back 30 years or more (see also tables *I3-1* and *I3-2* in the appendix, International Labour Organisation, 1964; UNESCO, 1973; Vivian and Hoffman, 1967).

For that, we highly appreciate the opportunity to co-operate with UNESCO-UNEVOC, which hopefully will contribute to fill this huge gap we are facing at the moment in the mid-term. We want to express our gratitude to Rupert Maclean, the Director of the Unesco-Unevoc Center in Bonn, without whom this volume as well as the Hangzhou conference would never have been possible: The joint Unesco-Unevoc Conference in Hangzhou in November 2004 can be seen as a crucial step towards filling the gaps

in information and international cooperation which are also showcased throughout this book. At this conference, experts discussed what the expectations for a good TVET teacher/ trainer are, how university courses should be structured and how an international standard could be developed and implemented. Another strand of the conference discussed which additional strategies should be pursued in order to increase professionalism of teachers in developed and developing contexts.

An international framework curriculum for a masters' degree for the education of TVET teachers and lecturers was adopted by over 60 profiled experts and decision makers on TVET teacher education. In addition a network of TVET teacher/ trainer educators was founded (UNIP, United network on innovation and professional development in TVET), which will serve as an agency for the development of TVET teacher education and research. Many of the contributors to this book have attended this conference and used the opportunity to discuss the issues raised in this volume. In the meantime two regional conferences have followed in order to put the decisions made in Hangzhou in place in different contexts of the world (Tianjin in December 2005 and Oslo in February 2006).

To those individuals who spent their valuable time and thought for this book we also want to express our deep thanks. Without their valuable work this book would not have been possible.

We hope that we have achieved putting together an interesting and informative book on the theme which can serve as an introduction to readers from different target groups such as students, researchers or policy makers in the field of technical and vocational education and training.

Philipp Grollmann and Felix Rauner, Bremen, February 2006

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Chapter 1

TVET TEACHERS: AN ENDANGERED SPECIES OR PROFESSIONAL INNOVATION AGENTS?

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This chapter introduces into this book by compiling some comparative results across the the individual chapters in this book. First the context is introduced by undelining the significance of teachers for the future workforce and secondly reducing the variety of existing TVET-Systems to four ideal-typical ways of organising the school-to-work-transition. In the third step some findings from the individual chapters are highlighted and some comparisons are drawn and embedded with results of other trransnational research projects. In a fourth step the main findings are summarised and some prospective conclusions will be drawn.

1. THE SIGNIFICANCE OF TECHNICAL VOCATIONAL EDUCATION AND THE STATUS OF ITS TEACHERS: AN ASTOUNDING PARADOX

One of the core problems of vocational educators' search for professional recognition is based on a paradox: while vocational teachers and trainers are essential to supporting skill development in the workforce, they are not high status for this role. Worldwide, some two thirds of the workforce, which constitute the backbone of each economy, are skilled workers, who have learned a substantial part of their occupational skills and knowledge through the support of teachers and trainers from the domains of Vocational Education and Human Resources Development. Given the basic importance of vocational training for economic success, it is remarkable that in many

countries VET has failed to achieve the level of social recognition that is needed to establish a profession. This is reinforced by the fact that teaching has always had problems gaining professional recognition, and has even been referred to as a 'semi-profession' (Etzioni, 1969). Given the increasing emphasis on lifelong learning, teachers and trainers as learning facilitators can be regarded as one of the core professions in the knowledge society. Improving teacher quality is therefore a significant lever for increasing the quality of vocational education, as acknowledged by many international and national organisations such as the recent monitoring activities of OECD with regard to attracting, developing and retaining teachers, the working group of the European Union on the qualifications of Teachers within the process education 2010, or activities in the Asian context (Battezzati, Coulon, Gray, Mansouri, Ryan, and Walker, 2004; Central Institute for Vocational Technical Education of the People's Republic of China, 2000; European Commission, Directorate-General for Education and Culture, & Working Group "Improving Education of Teachers and Trainers", 2003; Hopkins and Stern, 1996; OECD, Carnoy, and DeAngelis, 2002). However, the empirical importance of vocational learning is overshadowed by the big emphasis society puts on academic education and credits. Despite the fact that there are gradual differences regarding this structural problem, nevertheless this is one of the universal core problems. The "parity of esteem" between vocational and general education is still wishful thinking but could never be established. Still in international discourse the prevailing orientation is that Vocational education is something old and traditional fitting the needs of the pre-industrial and industrial society but not to so-called knowledge societies and economies or that it is at best a solution for low achieving students.

Quite commonly, innovation is associated with high investments into research and development and a sound academic education of workers. The role of professionals in the VET-sector or the potential role is often neglected. This is not least due to the fact that the reality of VET teachers and their working environments is much more complex than in any other profession. There are vast differences between the different systems of TVET and their societal contexts.

2. SETTING THE CONTEXT

In the global context TVET is in a situation of a gigantic global experiment, in which very different traditions and systems of school-to-work-transition compete with each other. Evaluating the international landscape of TVET roughly four models of the school-to-work transition can

be distinguished (Rauner, 1999). Each is characterised by great differences regarding the transition from general education to vocational training, the first threshold, and vocational training to work, the second threshold (see Figure 1-1).

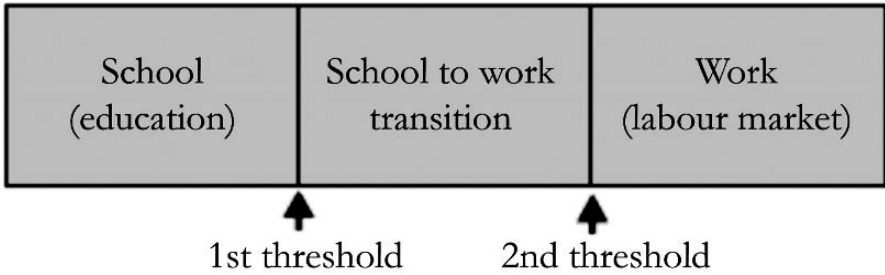


Figure 1-1. Thresholds in the transition from school to work

In the first model (see Figure 1-2), the first and second threshold of the transition from school to work are reduced to one threshold, for two reasons. On the one hand, there exist in-company labour markets in which qualifications for broader occupations play a subordinate role. On the other hand, vocational training on that basis can be dispensed with an independent career step between school and employment systems. In this model, training is carried out as a dimension of in-company organisational development. The workforce becomes competent by participating in organisational development. When a high level of general education, and a high degree of work morale and loyalty to the company are combined, this model represents one cornerstone of the experimental field in which school-to-work transition traditions compete with each other. The Japanese situation is the closest to this model. (Bowman, 1981; Moritz, Rauner, and Spöttl, 1995; Ruth, 1995)

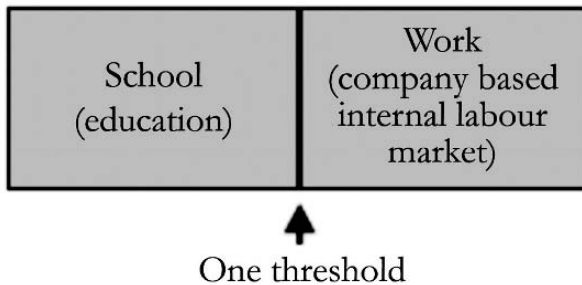


Figure 1-2. Direct transition

The second model (see *Figure 1-3*) is characterised by a relatively long and little regulated transition phase with extensive search and orientation processes for youth, coming along with a high rate of youth unemployment and other social risk situations, and a demand-oriented flexible, continuing training market with relatively low-qualified, industrial jobs. This model is also characterised by a high first and second transition threshold. Participation in training programs is closely linked to entry into the employment system and commencement of gainful employment and can be a temporary solution during one's search for a job. This model can be found in different variations in European countries such as in the UK, but increasingly also in countries with a strong academic orientation of the overall educational system, which acknowledge the need for more skills through investing into post-secondary further education measures, such as in Spain or Italy.

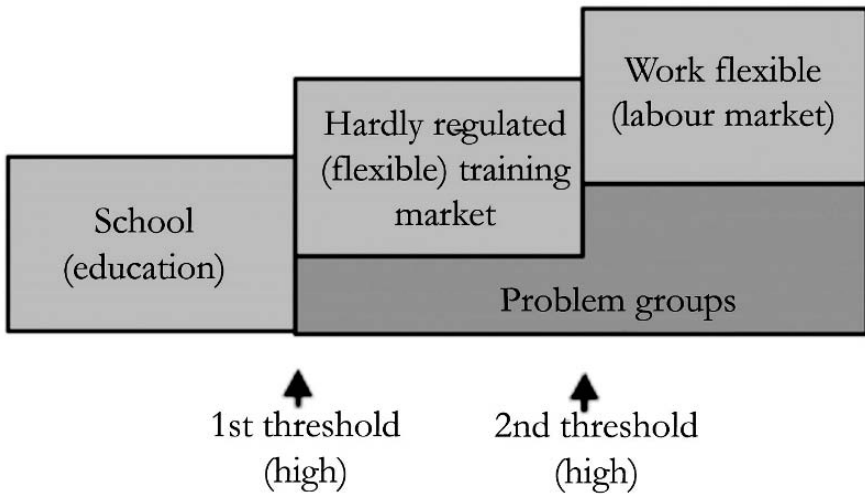


Figure 1-3. Hardly regulated transition

In the third model (see *Figure 1-4*) the transition from school to work takes place via a regulated system of “apprenticeship”. In this model the young person is a trainee, a student in a vocational school, and an employee in a company as an apprentice at the same time.

Both the first and second threshold are relatively low. The transition to work is smooth because the role of the youth as a student is gradually taken over by the role of the youth as skilled worker. As a trainee, he or she becomes an employee of the company and thus has the opportunity to establish an employment relationship beyond the training period. The

education system and the working world are linked to each other in a demand- as well as supply-oriented manner via the institution of occupations in this model. Dividing work into occupations is:

- A constitutive aspect for an industry-wide, open labour market
- A decisive factor for the organisation of company work processes
- The reference point for modern forms of apprenticeship.

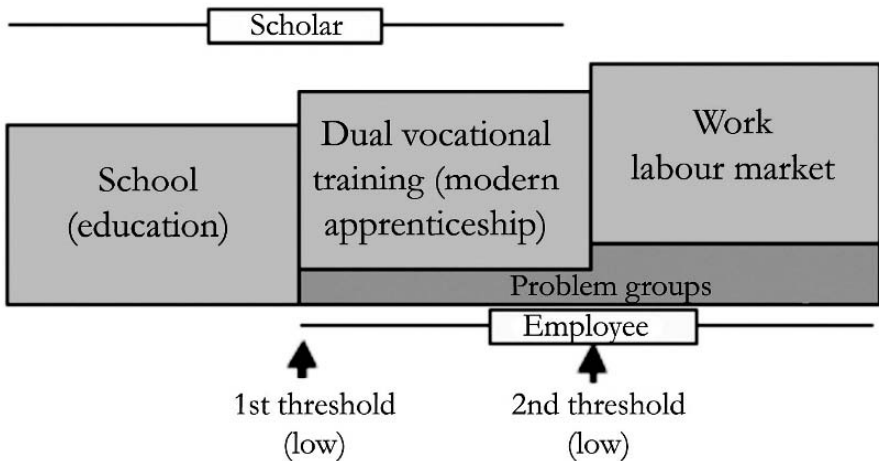


Figure 1-4. Regulated overlapping transition

Vocational training thus becomes a bridge between the working world and the education system. Youth unemployment is correspondingly low. In central European countries such as Switzerland, Austria, Germany, and Denmark this model dominates.

In the fourth model (see *Figure 1-5*), the transition from school to work is set up as a system of school-based vocational training. Completion of general education is followed by a vocationally related or vocationally oriented form of school. On completion of the vocational school, the students usually acquire a state certificate for special subjects or a school occupation attained.

Whereas the first threshold in this model poses no problem for youth, the second threshold becomes the decisive transition to the employment system. The transition from school to work is postponed for the duration of the school-based vocational training. School and work remain institutionally separate. Vocational training is supply-oriented. The large number of countries with a well-developed, school-based state vocational training system can be classified under this model. The four school-to-work

transition models essentially differ depending on the significance assigned to the occupation as the organising principle for labour markets, the company work organisation, and vocational training.

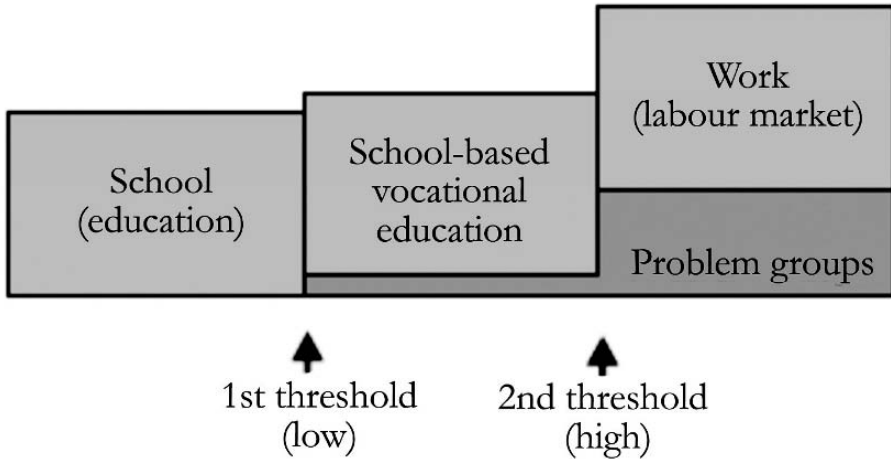


Figure 1-5. Shifted transition

3. DIVISION OF WORK IN TVET – AT LEAST 24 DIFFERENT TEACHING PROFILES

The chapter above has given an introduction into the range of different socio-economic contexts in which TVET professionals are working. In the different contexts the variety of functions of the educational day-to-day work is often distributed between different profiles of teaching and training. The main factors influencing the interplay between different profiles of teaching are the relative significance of TVET as opposed to other educational pathways and the shape of the institutions (secondary/ post-secondary; private/ public). Within the different chapters of this book several broad clusters of teachers and trainers can be identified. The sector has grown larger everywhere, although it is not everywhere well defined. The main clusters are:

- Teachers or lecturers working in formal school or college settings and giving instruction in vocational courses;
- Instructors and laboratory assistants, working in school or college settings in vocational labs,

- who teach with a high degree of autonomy
- or sometimes act as assistants to other vocational teachers;

Trainer, tutors, and others in enterprises who integrate training and education functions in to their jobs with varying degrees (from incidental to full-time teaching of trainees and apprentices). In dual systems, this function is often separated from HRD functions within companies, while in others this distinction is not strongly maintained;

Instructors and trainers working in labour market training institutions supported by governments and public authorities, often with a strong focus on social inclusion and basic occupational competences;

Instructors and trainers working in employers' organisations, such as chambers of commerce, sectoral training institutions or privately-run training companies and providers that focus on upgrading of technical competences, training in communication skills, etc.

In addition to these broad categories other professionals may be involved, such as HR professionals (who play an important role especially in e.g. France and Japan), guidance counsellors, general subject teachers, or social and youth workers, who provide specialised services. Sometimes these additional services are integrated with teaching, thus expanding a teacher's or trainer's role, sometimes they are excluded purposely, such as in the case of France, where teachers are only responsible for the actual instruction and the rest of educational tasks is delegated to other profiles in the schools, in order to allow the teacher to concentrate on his or her "core-business". Another way of dealing with the multiple possible functions of VET Teachers is to design their profile more strongly around their knowledge of the respective occupational field such as it is the case e.g. in China, where according to the country report in this book, the prevailing conception of a Vocational Teachers is that of a person who is mainly employed in a factory and only devotes parts of his or her time to giving practical instruction within the school setting even though reality of an increasing professionalisation has long caught up with this image. In the same order as specified above the clusters go in line with different age groups to be served. Vocational Teachers can be found within the spectrum of early pre-vocational technology education within the last grades of primary education but increasingly also in adult education settings, where they deal with adults of different age groups. Given only the four models of school-to-work transition and the six different teaching profiles as introduced above, that already leads to 24 different profiles of TVET teachers, lecturers and instructors. The reality will be much more complex, as the the different chapters in this book illustrate.

4. ROOTS OF PROFESSIONALISATION – DIFFERENT PARADIGMS

A glance into the histories of vocational teacher education shows that there are numerous of common motives and drivers for the establishment of specialist teaching profiles in vocational education. The main historical drivers of professionalization are the lack of skilled work in an industrializing economy and the need for social integration into a changing societal order. Therefore, the development of specialized profiles can be traced back to those fundamental changes in society. However, as *Figure 1-6* illustrates the time span in which those profiles appeared visibly for the first time in the countries investigated is quite long.

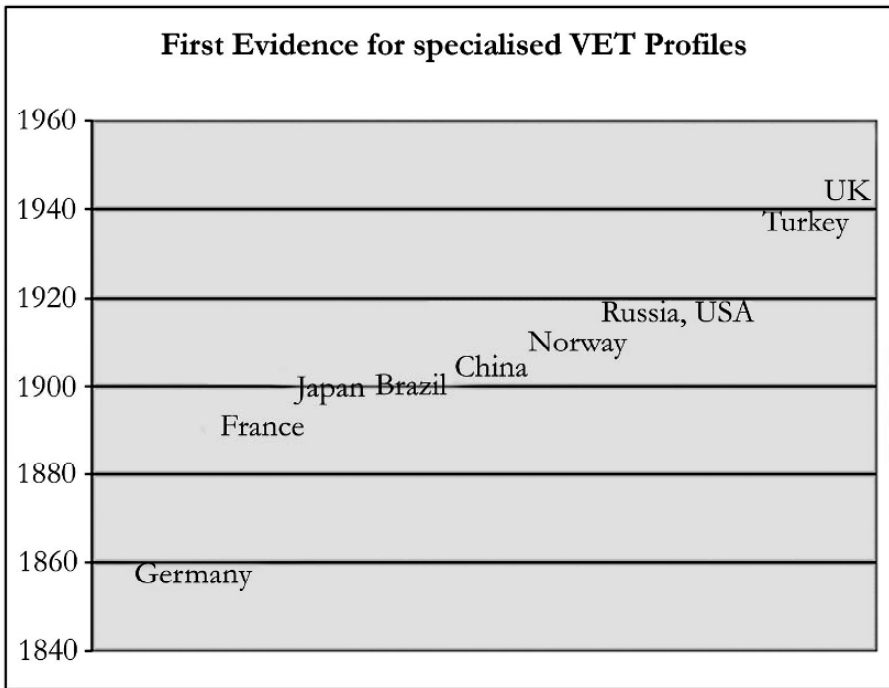


Figure 1-6. First evidence of specialised VET Profiles across different countries

The concrete development of the professional profiles and recruitment follows different patterns, which can be labeled as the trade-paradigm, the general teaching-paradigm and the engineering-paradigm. Each of the countries described in this volume has developed its own configuration of profiles and policies regarding those common dimensions. In some countries such as

Germany, France or the US, different fundamental patterns have developed over the years as parallel and sometimes competing models (e.g. between Southern Germany, Northern Germany and Prussia or within the difference of the conception of Prosser and Dewey in the US).

The actual shape of the development also depends on the status and infrastructure of the respective academic disciplines as showcased through the differences in the teacher preparation of teachers for trade and industrial or health occupations on the one hand and those for agriculture, business, family and consumer sciences, technology education, or marketing in the United States. For a couple of countries there also have been blends between the different paradigms due to international knowledge transfer in the early days of Vocational Education. This can be seen in the chapter on Turkey, Japan and China.

The engineering-paradigm is closely connected to a model of full-time secondary vocational schooling (such as in the the shifted transition model). Therefore, this model can be found in the French context but also in the Turkish context. In a fromal professionalisation perspective the advantage of this model is that it can usually be found in such countries where the subject matter plays a major role for the education and recruitment of teachers in general. Consequently, the VET teaching profiles often require in-depth subject matter studies raising the status of VET teachers in direct comparison to other teachers. E.g. in China the professional status of TVET teachers is reasonably high despite the low esteem of manual labour.

The most obvious case of the general teacher orientation is the UK model, in which, no matter if the desired position in teaching is in TVET or general education, the teaching qualification is mainly an add-on to the subject matter studies. This model can also be found in the U.S. Usually, the conceptualization of professional teaching is that of general pedagogies and methods without a specific subject-orientation, such as in the “didactics” model. This model is open though, for a broad variety of practices. Regarding the school to work transition types it closely corresponds to the hardly regulated transition model. Often the types of teachers who can be found at British FE or US-type community colleges also resemble the trade-paradigm due to their strong commitment to the occupational world they are coming from. This is often connected to a well established network in the respective occupational milieu and provides innovative potentials while at the same time being in danger of leading to occupational localism and a lack of formal professionalization (such as mentioned for the UK FE-Colleges). Beside the socio-economic context and the model of school-to-work transition, the manifold variety of insitutional shapes in TVET across the different countries seems to be a crucial factor in determining the work of vocational teachers.

5. TVET INSTITUTIONS - PRACTICE OF TEACHING AND INSTRUCTION AND OCCUPATIONAL REALITY

5.1 Different types of institutions

There is a huge range of institutions, in which the teachers and instructors are working. Also within countries there are different schools and colleges in which teachers and instructors are working. For example the US chapter describes four different types of secondary vocational highschools and in addition one post-secondary institution, i.e. the community colleges. This goes in line with the same variety of teaching profiles. In Japan a similar structure can be found without that strong differentiation into different types of vocational highschools, let alone the huge variety of training profiles in private companies which play a huge role in many systems such as in the US or Japan. The institutions in which the TVET teachers work can be described on a polarity between extremely flexible colleges on the one hand and school-type secondary institutions on the other hand. In some countries – Norway is the extreme in that regard – there is only one uniform institution providing secondary VET, i.e. the vocational school. In other countries we find a broader variety, such as full-time vocational schools and part-time schools in Germany, labour market institutions and vocational colleges in Denmark or the variety of types of institutions in the Brazilian different sub-systems of TVET.

The very flexible institutions such as the FE-colleges in the UK follow extremely different management patterns than the more school-type institutions in France, Germany. Scandinavian schools and colleges build a compromise between those poles. In the UK the flexibilisation of post-secondary education provision was even one of the main rationales behind the introduction of the so-called FE-colleges. On the sketched polarity UK, DK, Brazil and interestingly also Chinese institutions build the one pole and France and Germany the other one.

The distinction is of specific relevance when it comes to the question what type of employment patterns the institutions make use of regarding their teachers. Several models can be found from the “Beamter”-type public service employee with rigid recruitment regulation, seniority promotion and permanent lifetime contracts, such as described for Germany, Turkey or France to very dynamic patterns of part-time teachers, honorarium lecturers such as in the American community colleges, the Japanese technical post-secondary institutions and the Brazilian technical colleges. Often those part-

time and non-permanent contracts allow allow for a gradual shift into full-time positions. Whereas the very flexible ways of recruitment and contacting often lead to management problems and a “balcanisation” of schools and colleges, the more employment regimes based on more stable commitments sometimes go in line with traditional conceptions of organising learning and instruction and a lack of innovation.

5.2 Practices in institutions

However, this judgement is based on very soft evidence provided in the chapters of this book: one of the biggest blind spots we find when looking at the domain of TVET is the actual practices of teaching and learning within colleges, schools and companies. Only a few pieces of research exist which have focused on this question (Grollmann, 2005; Grubb, 1999). The contributions only convey a rough clue on how manifold the practices within those institutions can be regarding the different teaching and learning cultures in VET.

In all the different country-studies in this book it can be seen that the challenges for teachers increase from well delineated frames of action towards more complex demands:

Technology is more sophisticated and changes faster than it did only a few years ago. This is especially true in the institutions at the post-secondary level of VET, such as the colleges in the UK, the U.S or Brazil.

At the same time it can be observed as a general trend that educational practice is more and more directed towards the individual, sometimes referred to as a the trend from teaching to learning as shown at its best through the Danish chapter.

Those two trends are often accompanied by a persisting conceptualisation of vocational knowledge as consisting of “theoretical” and “practical” knowledge.

In some of the country chapters the trends are explicitly mentioned as factors which lead or have led to a stronger formal professionalisation in the respective countries (B, UK, PRC). However, in some of the countries, such as Brazil and China there also is a huge gap between the qualifications wanted and those which are actually held by the candidates. So the programmatic of professionalisation clash with the reality of recruitment. Regarding the relationship between recruitment and the practices of teaching and learning there apparently exists a fundamental dilemma:

on the one hand there is a highly professionalised model of teacher education and recruitment, which involves all the advantages of formal professionalisation, such as a sound knowledge base incorporated into programmes of study and academic infrastructures, high wages and good

professional status, and an “ad-hoc”-model of recruitment based on experience in the field.

Those two models on the other hand correlate with a strong alienation from the world of work such as in France but to some extent also in Germany for the formally professionalised model and stronger work-process orientation for the less professionalized models based on more flexible patterns of recruitment. These models however correspond more strongly with the problems of occupational localism and strong subject-based identities which stand in the way of organisational development processes in schools and colleges and collegial co-operation.

China with its professionalisation policy on the one hand and the reality of schools at the other hand seems to have found a viable compromise regarding those two clusters of problems. They rank high regarding the professional and institutional flexibility of the individual schools but are also expanding the basis of formal professionalisation through the setup of respective higher education programmes.

An old, if ever valid outdated but persisting conception of the division of work in schools (e.g. France), between schools (e.g. USA) or between different venues of learning (e.g. Germany) is that of making a distinction between “theoretical” and “practical” curricular content. Even though this conception does not hold the insights of modern teaching and learning research nor does it stand the practical insight of the teaching community it persists over years. In some countries this is even resembled within the structure of available teaching profiles in vocational education. The best example is France which mirrors the French Taylorism of industrial production within the division of work in school not only in terms of profiles but also regarding the necessary entitlements and the salaries, where the so-called theoretical and general teachers are paid and recruited on the basis of rules for academic teachers and the “practical” teachers are being paid and recruited on another system. This has led to an affirmation of the low esteem of the “practical”. A similar configuration can be observed in the German setting and its division into teachers for subject-specific “theory” and “practice” within the companies and is also mentioned in the Chinese chapter of this book. The decomposition of work-tasks basically follows a Taylorist logic of work, diverted into decision-making and management on the one hand and operative tasks on the other. In the practice of vocational schooling the relevant subject areas are often called “vocational theory” and “vocational practice”. In dual systems this problem can be reinforced through the definition of professional roles for different learning venues, such as in the German case where there are professional vocational teachers on the one hand and workplace trainers on the others.

Another crucial factor of the teaching and learning practice within the TVET institutions is the degree of individualization of programmes. The most radical type of educational individualization can be found in Denmark since the Reform 2000. Based on a constructivist conception of learning, the responsibility for the learning is fully delegated to the learner, which challenges the role of VET teachers dramatically. Classroom based instruction for a group of students becomes more and more the exception and being the supportive coach and consultant in order to help the individual learner to responsibly shape his or her learning becomes the new professional task. A dividing line between different institutions is however, if this individualization follows a pedagogical concept within an Institution and embedded into a broader systems' philosophy or of it is just the pedagogical implication of an individualized responsibility for educational biographies.

A special challenge which is reported from different contexts is the increasing specialisation or knowledge intensification in certain technologies, for which often the qualifications and competences and teachers are not adequate. This will increasingly be a problem given the demand for such specialisation in the future and something which challenges traditional recruitment regimes and modes of working in schools and colleges. Especially the Brazilian colleges in the S-System described in this book have reacted on this with a dual concept of classical ways of teacher recruitment on the one hand and more flexible ways of recruitment of lecturers on the other hand. Both trends together, the further individualisation of teaching and learning together with the devotion of responsibility to the learner and the increasing knowledge intensification challenge classical paradigms on instruction and consequently patterns of education and recruiting TVET teachers. For the teacher that means that a task which is more or less indivisible by essence (the competent and ethical fulfillment of the professional learning support) needs to be shared, since the expertise is spread and cannot be held by individual teachers anymore. As regards to the content, divisibility is a necessary by-product of a growing intensification of knowledge which can only be compensated by an increasing team-orientation of teachers and a more focussed profile of different teachers working in the setting of the college and the school.

6. STRUCTURAL DETERMINANTS OF TVET PROFESSIONALIZATION

Higher recruitment standards on the one hand, and the need to meet the demand for teachers on the other, has caused many countries to reform their teaching profiles and teachers' progression routes. In those countries with

regulations and relatively high recruitment standards, vocational teaching profiles are geared strongly towards the model of the secondary teacher, e.g. as a civil or public servant with contracts and promotion mechanisms based on the rules of public administration and seniority.

There are some particular aspects of recruiting teaching and teachers in VET, which differ from teacher recruitment and education for general secondary school subjects (see also Lassnig, 2001). Given the variety of teachers' and trainers' roles and functions in the knowledge economy, one of the crucial issue is to identify the kinds of knowledge teachers and trainers use in effective learning processes. This problem is reinforced by the fact that – as opposed to general education subjects – there is no clearly defined subject matter for VET professionals – the content of vocational learning is highly embedded within the contexts of work, education and technology. Therefore, some teacher recruitment and training policies favour educational background over work or technological experience, and vice versa.

Germany and France have the strongest regulations regarding the recruitment of teachers, whereas the UK and the US had the most flexible recruitment regulations. The modes of recruitment correspond largely to the shape of the institutions, as described above.

In all of the contributions it is shown that countries acknowledge the importance of the teaching force in developing their VET systems. However, there are some structural challenges to the further upgrading the teaching force and raising its status (see also OECD et al., 2002). Demographic factors are a known, but often overlooked and powerful driver of teacher recruitment policies. In the late sixties and beginning seventies (the 'baby-boomer' generation), for example, we saw a huge expansion of the teaching force. As a result, in the OECD member states, 40% of the teachers are between 40 and 50 years old. For the countries covered in this book this challenge is mentioned throughout almost all the chapters. For China it is also mentioned that on the other hand many of the newly qualified teachers are too young and are often lacking work-experience. Because of this lack of qualified teachers all kinds of different emergency measures are put through. E.g. it is reported from U.S. but especially from Japanese and Chinese highschools that they recruit their teachers among their own graduates, which seems to be the educational version of the well-known Asian internal labour-markets.

Other crucial structural determinants of teachers' work and professional situation are the hours they have to teach and the number of students they have to care for, usually measured in the student/ teacher ratio and the payment they receive. With regard to teaching hours information from the chapters of this book indicates an amount of 24-26 hours for full-time teaching positions as a universal rule.

OECD studies have shown that in some European Countries the average pay of (primary) teachers, which can be used as proxy for the relative wages across countries for other teaching salaries (no information for vocational teachers in particular is available on an international basis) is higher than the predicted relative salary (highest difference in Ireland, Portugal and Spain for Europe). The same is true for Northern America. However the informational basis on this is very soft, since many of the teachers and lecturers in TVET do not fall into the statistical categories. In addition the variety of contractual agreements (e.g. on district-to-district basis in the US) makes it very difficult to provide data for international comparisons. Ultimately, this is symptomatic for the fragmentation regarding the TVET profession. In addition, it would be important to gather data to compare the salaries and benefits provided to vocational teachers to those in alternative jobs that teachers might take in the labor market.

It is important to increase teacher pay in many countries for at least two reasons. First, lower wages are less likely to attract more qualified individuals into the profession and may contribute to ‘contra-selection’ -- those who do not get employment in other domains enter the teaching field. Low pay can also signal undervaluation of teachers’ work, which can lead to a lack of commitment to the job. This can take three distinct forms:

- Qualifying for the teaching job through targeted and costly programs, but entering a different field of employment;
- Leaving the education sector, because of more attractive possibilities on the external labour market;
- Working in the education sector, and taking on a second job in education or the respective subject field.

These outcomes of low teacher pay were mentioned in some of the chapters, e.g. Brazil or Russia. In order to prevent the abovementioned strategies, in some countries the salaries of teachers in TVET are higher than those of their academic counterparts, as it is for example the case in Japan. The table 1-1 also documents teacher shortages in many of the countries studied. For some countries, such as Brazil, Germany and France, shortages occur for teachers of specific subjects, especially those in high demand on the external labour market. In other countries, broader demographic trends account for teacher shortages.

The danger is that in many countries the main rationale behind reconstructing recruitment and career routes is the demographic or other constraints the respective country faces.

Table 1-1. Structural policies and problems with regard to VET teachers – Examples from the global context¹

	New profiles and progression routes	Wages below national average	Ageing and actual or future Teacher shortages
Austria		x	
Brazil		x	x
Belgium	x		x
Bulgaria		x	
Czech Republic	x	x	x
China	x		x
Denmark	x		x
France			x
Germany			x
Hungary		x	x
Iceland			x
Ireland	x		
Japan			x
Latvia		x	
Lithuania	x		
Netherlands	x		x
Norway	x		
Poland	x	x	
Romania	x	x	
Russia			x
Slovak Republic		x	
Turkey			x
UK	x		
USA			x

On the post-secondary level and in private TVET provision the working hours of lecturers, teachers, trainers can vary considerably according to the status of the organisation, its size (such as SME or bigger enterprise), and the status of the individual (freelancing/ contracted, full-time, part-time, etc.). The same holds for the student/ teacher ratio. Quite clearly, a low ratio is the best way to provide teachers with the necessary preconditions to be able to

¹ Information compiled through the analysis of: OECD, Carnoy, M., & DeAngelis, K. (2002). Chapter 3: The teaching workforce: concerns and policy challenges. In OECD; (Ed.), Education Policy Analysis. Paris: OECD, the background materials of the so-called Maastricht-Study, Leney, T., & The Lisbon-to-Copenhagen-to-Maastricht Consortium Partners. (2005). Achieving the Lisbon goal: The contribution of VET. London: QCA, London, UK; BIBB, Bonn, Germany; CEREQ, Marseille, France; CINOP, The Netherlands; ISFOL, Rome, Italy; ITB, University of Bremen, Germany; National Training Fund, Prague, Czech Republic; Navigator Consulting Group Ltd, Athens, Greece; Danish Technological Institute, Denmark and data provided in this book.

carry out their multiple roles. However, also states, which have comparatively low ratios, are not always able to turn this to their advantage as was shown by the PISA results for general education. As education systems have significant personnel costs, countries are very interested in finding ways to increase teacher efficiency. Better data that includes information on the various dimensions that contribute to efficiency, such as salaries and work conditions, would be most beneficial.

7. TEACHER EDUCATION

The following basic models of TVET teacher education can be distinguished:

- A model mainly based on the recruitment of practitioners of a certain field of occupational work, who complete additional courses in teaching and training management techniques usually leading to a teaching certificate, which provides the necessary qualification for the work in the education sector.
- A model which is based on sequence of studying the subject matter, e.g. on the B.A. level and then obtaining an appropriate entry qualification to the education sector through acquiring general teaching skills in a designated course programme.
- A model which is based on the concurrent study of a subject matter and educational sciences leading to B.A. or M.A. degree. Often the subject matter study takes the form of a diminished portion of the ordinary business or engineering degree. Sometimes special vocational didactics are added.
- The last model is based on an integrated conception of vocational disciplines, which entail the subject matter as derived from the world of work (i.e. not from the respective engineering discipline) and a model of competence development within this domain.

In general the order of those basic types also correspond to the formal level of the degree obtained after undergoing the respective path of teacher education. *Figure 1-7* illustrates the relative position of the different dominant TVET teacher education pathways of the countries covered in this book.

However, there also certain differences which are not covered through this simplifying depiction. In Denmark, for example, the subject matter emphasis is less important, apart from occupational experience and a qualification in the respective occupational field, whereas in Norway there was established a programme of study which envisages the integration of

subject matter, pedagogy and teaching techniques. This integration also exists in some German universities, whereas in others the vocational teachers' subject matter education is oriented towards the respective engineering or business degree. The additive concept can also be found in Turkey, with a share of almost 65% of the programme covering the subject matter, leading to a four-year B.A. degree for the prospective vocational teacher.

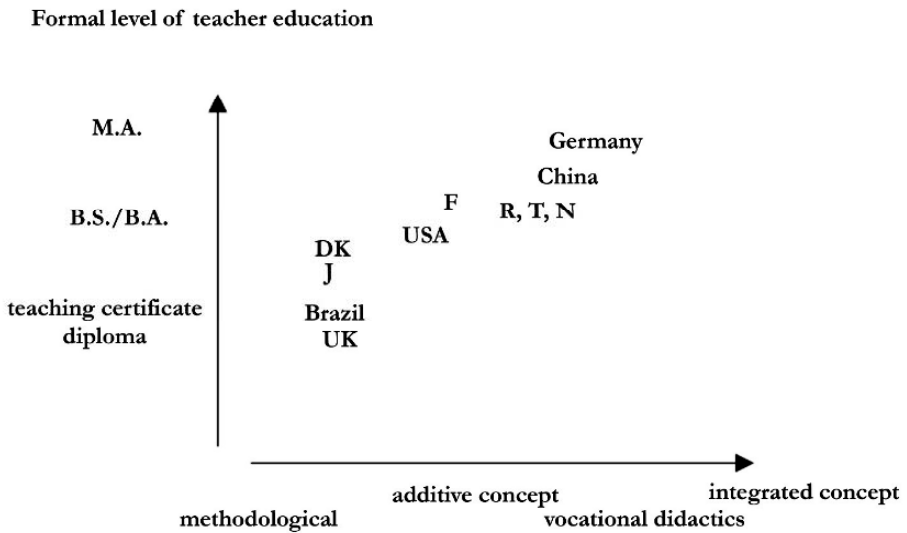


Figure 1-7. Formal qualifications of TVET teachers

Another difference is the typical sequence that training and recruitment follows. A common model across Europe is the in-service model, in which the teacher's qualification is acquired with the first, usually probationary phase of employment. The length of this qualification varies from 40 hours to a B.A. equivalent degree. Typically, the in-service model does not take into account the respective subject matter, but is mainly focused on psychological and basic educational knowledge and on teaching methods and techniques with some variations. In most cases, the precondition to employment as a vocational teacher is a B.A. degree plus relevant work experience, depending on the targeted teaching subject. Sometimes the in-service courses are offered at the university level, sometimes in specialised public institutions tailored to teacher training, such as in the case of France's IUFM. The in-service model can be found in different variations, sometimes with a short pre-service training period as the dominant model, as is the case

in Denmark, UK, the U.S. or more extended preparatory training, such as in France.

Work experience is often required for teachers in vocational education. According to the country chapters the following countries put particular emphasis on this dimension in their teacher recruitment: Brazil, Denmark, Japan, and the UK. Work experience might be a pre-condition in other countries, too, but in the aforementioned countries it is the *major* precondition for entering the vocational teaching field. Even in Germany, which maintains the highest formal level in terms of academic requirements for entering the vocational teaching field, there is usually real-work experience prescribed through the University curricula. The majority of student teachers in Germany hold an occupational qualification in their field, in case that they do not hold this they have to undergo an internship in an enterprise.

For many countries with a consecutive sequence of teacher training (subject matter first, then educational qualification), the B.A. is the typical entry requirement for enrolling into teacher preparation courses. Some of the former specialised teacher training institutions have been or will be transformed into institutions with university status in Europe in line with the Bologna process, which opens up new possibilities for those who have obtained teaching qualifications to deepen their studies at the M.A. level.

Even though the integrated model is put forward as the most promising model of teacher education already in early publications on the theme (International Labour Organisation, 1964) only limited progress has been made with regard to the setup of such programmes. The most significant challenge is the integration of subject matter and pedagogical training. Attempts are being made in some European countries to build coherent research and training programmes that reflect the integration of subject matter and pedagogy in VET. One example of this kind of integration is the idea of *research on occupational clusters* (Berufsfeldwissenschaften) as developed within the Working Group on 'Gewerblich-Technische Wissenschaften' in the 'Gesellschaft für Arbeitswissenschaften' network of German University Institutes for the training of vocational teachers and trainers, where all research activities are focused on 'core-problems' and 'developmental tasks' within specific occupational clusters, such as manufacturing, electronics and ICT etc. A similar approach can be observed in the French discussion on ergonomics, as the French country report illustrated. The integration of subject matter and pedagogy is also the rationale behind the B.A. and M.A. level courses offered in Norway's vocational teacher education college accompanied through a newly established research programme (introduced 2003), and it is also developed within the teacher education schemes in Turkey to some extent. Hopefully the results of the founding conference of

the Network UNIP, which lay down a framework for the design of TVET teacher education based on twelve vocational disciplines build a new step in achieving progress in that regard.

8. CHALLENGES AND PERSPECTIVES FOR THE PROFESSIONALISATION OF TVET TEACHERS AND LECTURERS

8.1 The TVET profession within the interplay between globalization and localization

Regarding the relationship between recruitment and the practices of teaching and learning there apparently exists a fundamental dilemma:

on the one hand there is a highly professionalised model of teacher education and recruitment, which involves all the advantages of formal professionalisation, such as a sound knowledge base incorporated into programmes of study and academic infrastructures, high wages and good professional status, and an “ad-hoc”-model of recruitment based on experience in the field.

Those two models on the other hand correlate with a strong alienation from the world of work such as in France but to some extent also in Germany for the formally professionalised model and stronger work-process orientation for the less professionalised models based on more flexible patterns of recruitment. These models however correspond more strongly with the problems of occupational localism and strong subject-based identities which stand in the way of organisational development processes in schools and colleges and collegial co-operation.

This introductory chapter has shown the variety of contexts and profiles of vocational teachers and lecturers. Huge differences exist with regard to the question, how teachers and trainers are recruited, the work between different profiles is shared and how they are prepared in order to cope with their daily work. Despite the variety of different contexts in which TVET teachers are working, it can be seen throughout the chapters of this book that there are also quite common challenges across different systems of TVET on the concrete level of teaching and learning.

The main factors which have been identified universally are:

- technological developments;
- curricular individualisation;
- the persisting ideology of a theory and practice division;

- and demographic factors.

In opposition to those universal factors there is a number of factors which influence the development of the TVET profession towards more localised development paths. Through the chapters of this book these are: in particular

- the configuration of historical TVET teaching paradigms;
- the specific national configuration of the school-to-work transition and the labourmarket;
- the specific shape of the TVET institutions;
- and the relative position of TVET in the educational context of the overarching culture.

In a more in-depth study looking at changes at the micro-level of TVET the challenges teachers and lecturers confronted with were described as the increasing blurring of the delimitation of profiles on the one hand and the growing intensification of the knowledge and skills on the other hand (Grollmann, 2005). The former is exemplified through

- A wide understanding of instruction, which goes beyond the boundaries of traditional classroom settings;
- An increasing demand for organisational development in schools;
- A widening of the possible client groups (from social work to HRD tasks);
- A re-organisation of the subject matter and the knowledge base according to work and business processes as opposed to traditional school-subjects or academic disciplines;
- An extension of the role VET colleges play in their regional environments;
- An increasing amount of public awareness and accountability.

Intensification, mainly as a trend regarding the professional knowledge base of vocational teachers, is exemplified through the following aspects:

- For a long time the “object” of educational intervention was the class or a group of students, whereas it becomes more and more the individual learner with all his or her experiences, biographical background etc. Therefore, the structure of pedagogical interventions becomes increasingly complex;
- The intensification of the respective subject matter knowledge of course contributes to the intensification of the relevant pedagogical content knowledge;
- New role expectations, such as coaching, moderation etc go together with new forms of knowledge about teaching and learning.

These developments can also be traced within the different chapters in this book. Despite those new challenges, forty years (!) after the first

comparative study on vocational teachers many of the developmental fields and problems which had been identified still remain unresolved. A few examples are mentioned in the following quotation:

“ [...] Vocational Teachers should be given the same status and the same remuneration commensurate with those accorded to staff in general education; [...] Research should be carried out by teaching staff qualified in the scientific and technical specialisations Research should be result of teamwork of persons from industry, education and persons concerned with the theoretical side of the technical subject and the psychology of learning” (International Labour Organisation, 1964)

Up to now, there have been few attempts at the international level to tackle the specific challenges of the education and training of vocational teachers and trainers. This issue deserved special attention given the importance of the TVET profession through their direct and indirect influence on the development of skills in the economy, and based on the complex occupational tasks they have to fulfil;

A comparative view searching for the common on a transnational level looks ambiguous: on the one hand we can see a slight tendency of an increasing formal professionalization (e.g. UK; T) on the other hand a we can also obey a certain flexibilization which always carries the risk of de-professionalizing existing structures (e.g. D). This reflects the difficult compromise between acknowledging the need for quality teachers, while at the same time having to struggle with demographic and economic problems regarding the operation of the countries educational systems in the future. Especially with regard to the increasing work-process and competence orientation in TVET a quality model of vocational teacher and trainer education, training and recruitment policy has to be flexible in order to attract individuals with different backgrounds, while at the same time raising standards in skills in knowledge (especially with regard to pedagogy and the subject matter).

Looking through the angle of established professions the worldwide situation with regard to the vocational teachers remains largely fragmented. At the same time the different contributions in this book showcase the variety of solutions possible and provide a rich resource base for the reform of vocational teacher education and recruitment on the national and transnational level. Given the fundamental importance of VET teachers for economic success and social integration the current fragmentation of VET professionals and their education should be high on the political agenda; in the last section of this introductory chapter we would like to make a few remarks on how to overcome the fragmented situation.

8.2 TVET teachers in limited cultures of innovation

Societal innovations are usually based on an interplay between different spheres, i.e. the political sphere, the sphere of practice and research and development see Figure 1-8. As this book shows up to know a developed RD infrastructure for TVET only exists in few countries and the cooperation between those different R&D Cultures is weak. In some countries with a strong research culture in VET, particular emphasis is placed on identifying the ‘domain specific’ features of skilled work in different occupational or career clusters (e.g. Norway; US; D; T). This research is directly connected to teachers everyday problems, whose task is the integration and link the relevant subject matter with the right pedagogical methods for the individual learner;

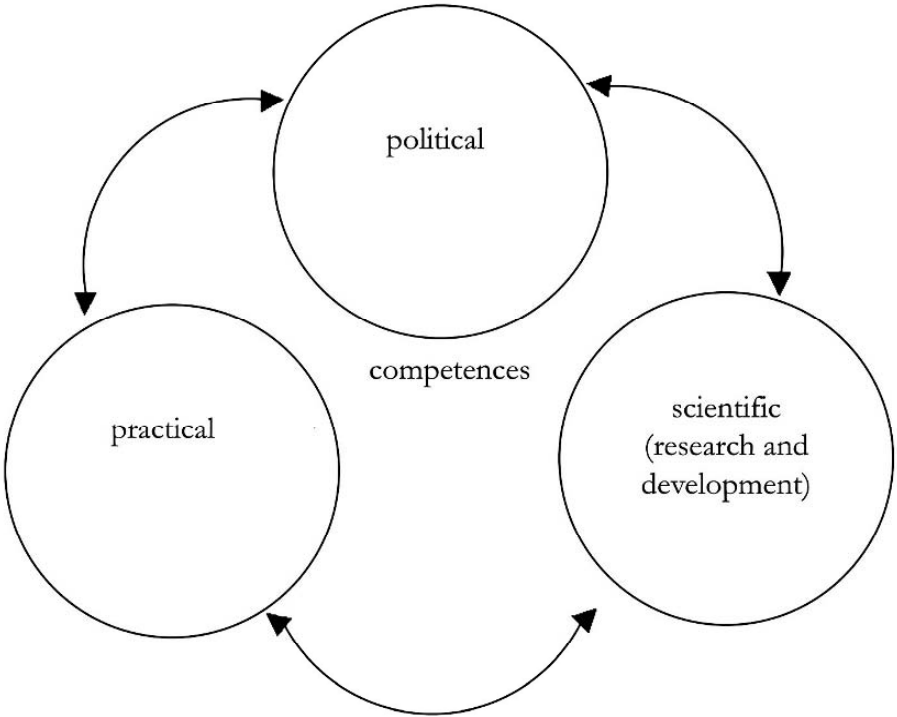


Figure 1-8. A coherent TVET innovation pattern

The political, practical and research world are the three main dimensions that interact within sustainable TVET innovation processes. If one of these dimensions is absent, we speak of a limited innovation pattern (LIP). If the

TVET dialogue at national or international level is only based on the dialogue between policy and the social partners represented by trade, industry and craft (see *figure 1-9*) the potentials of research and development existing all over the world and in all countries as a gigantic network of universities with all their domain specific colleges and institutes – these potentials are not used in an incomplete TVET dialogue.

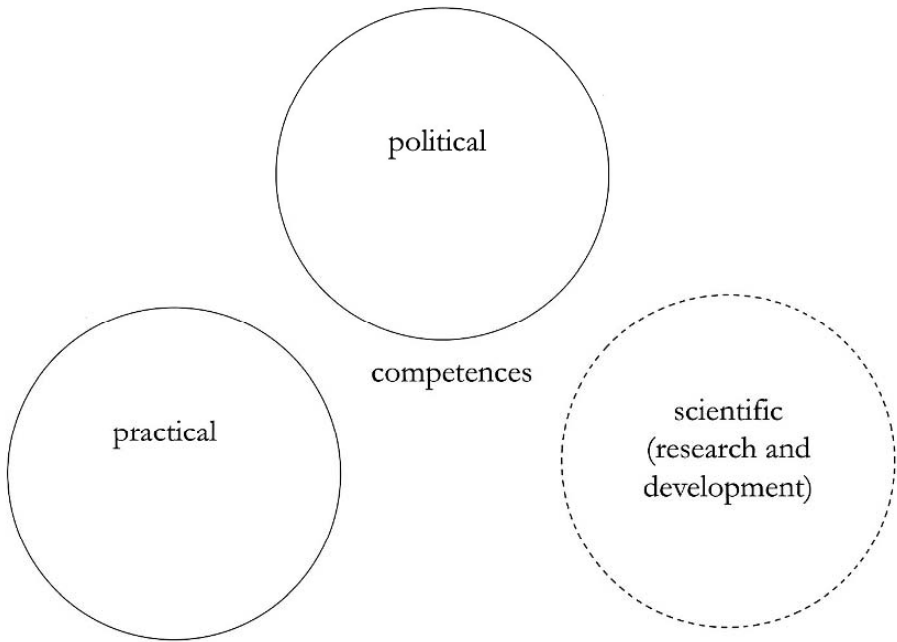


Figure 1-9. The reductions TVET dialogue based on a LIP

In a lot of countries until today universities are not integrated with their teaching and research capacities in TVET development. This is one reason for an unbalanced co-operation between developed and under-developed countries. Developing countries very often depend on the expertise of TVET professionals from innovative TVET traditions. The only chance to overcome this consultancy tradition is the incorporation of the national scientific infrastructure, - the universities - into the TVET development. Therefore the implementation of fully professionalized university study as well as PhD-programmes is a pre-condition for TVE. It is also a more general precondition for a reproductive and innovative TVET system. And more than that, international co-operation in TVET could be significantly enhanced and sta-

bilized through this and leave away from a tradition of short-termed consultancy work.

The TVET profession should become a partner of the international project “Crossing the Borders” of the fragmented TVET landscape, learning from each other on the basis of best practices all over the world and, of course, learning from failures , which we have to identify, too. Universities and institutions of teacher education and training can play a significant role as a backbone of this increased international co-operation as long as this is sufficiently backed by international organisations as well as by the TVET profession itself. The contributions in this book illustrate the rich base of experiences on which such an international dialogue could be built. The fragmented situation around the world and within different countries however also suggests that a lot needs to be done in order to tap the potential of a TVET teaching profession as agents of innovation instead of observing its extinction.

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Chapter 2

TVET TEACHERS IN BRAZIL

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1. HISTORICAL DEVELOPMENT

1.1 The Roots of Professionalization

The identification of the roots of professionalization for TVET teachers in Brazil is deeply linked to the history of technical and vocational education itself in the country. The inescapable relationship between the conceptual and practical development of this kind of education must be taken into account along with related teacher requirements.

Retracing the history of TVET concepts and practices in Brazil involves elements outside school boundaries, since this type of education has developed within other social institutions: labor unions, businesses, district associations, community associations and social movements (Manfredi, 2002). We will return to this point later, especially in relation to the creation of the “S” System, a partnership between employers and the government.

Writing this text involved two specific challenges. First, educational research in Brazil has focused on education in traditional school settings. Therefore, there is not much literature on education in other types of educational settings. Second, research has primarily focused on higher and secondary education to the detriment of TVET, making literature on the subject even more rare. This can be explained by a cultural phenomenon. Brazilian educational historians have been much more concerned with academic education, especially for the elite, rather than with vocational education. (Cunha, in Manfredi, op.cit.).

1. Indisputably, demands on the training of TVET teachers have changed according to the transformation in the labor market over the past few decades. In colonial times in Brazil, an apprenticeship in the plantations did not require trained teachers. In the workshops of the Jesuit schools, however, there were intensive activities in professions that included tailors, carpenters, shoemakers, blacksmiths and male nurses. Teachers were lay members of the Society of Jesus who brought knowledge from Europe to teach free men or slaves and Indians or Afro-Brazilians to construct buildings and ships and to make bells, clocks, tools, musical instruments, guns, gunpowder, pottery and medicines.
2. When the Empire was established in Brazil with the transfer of the Portuguese royal family, significant economic changes occurred within the country and industrial activities began in both the state and private sectors. In order to prepare a workforce for the rising economy, the state developed a training system for technicians for the workshops, factories and arsenals. This effort was aimed at training poor children and youths. Many Arts and Workmanship Schools were created in various parts of the country. In 1881, the Lyceum in São Paulo became the first course open to women.

During the First Republic period, from 1889 to the 1930s, as observed by Manfredi (op.cit.), the school system and vocational education took on a new shape. The State of Rio De Janeiro under the rule of governor Nilo Peçanha created the first true technical schools. A few years later, as president of Brazil, Peçanha installed a network of nineteen schools, thus starting the federal network of technical schools. Another source of this kind of school were the Catholic Church and the various workers associations or unions. The focus of these schools was to qualify and discipline urban workers. It goes without saying that vocational education was geared toward the poor, as the children of the middle class were destined for the liberal professions.

1.2 The Early Days of Teacher Training

It must be stated at the outset that the first TVET teachers were technicians and workers with no pedagogical background. The first and most significant example of training teachers for TVET was registered in São Paulo in the early 1900s. To train and qualify masters of workshops, the state government created a two-year course linked to each of the existing institutions in the state capital. One course was created for men and the other was for women. After two years of study, these master-learners were submitted to a six-month period of practical training. This was considered to be a pioneer effort in preparing teachers for TVET.

During the period between 1937-1945, the Organic Act redesigned the curricula and links between courses, cycles and levels of the educational system. Middle school included five branches. The first was a secondary school that addressed the entrance examination for higher education. Agricultural school prepared workers for the primary sector of the economy, industrial school qualified manpower for the secondary sector, commercial school trained people for the services sector and “normal” school prepared teachers in primary school education. This educational structure for intermediate schools which separated general education and technical education persisted even under the 1961 General Education Act.

In the 1970s and 1980s, TVET became more closely attached to the development programs of the government. These included government programs such as PIPMO – Programa Intensivo de Formação de Mão de Obra or the Intensive Program for Preparing Manpower. This program was developed in the existing network of schools as well as in other agencies of technical and vocational education. To prepare teachers for this program, an important role was played by CENAFOR – Centro Nacional de Aperfeiçoamento de Pessoal para a Formação Profissional or the National Center for Improvement of Personnel for Professional Training. The program was created by presidential decree in 1969, with power for the whole country, primarily aiming:

- to prepare teachers for the specific subjects of professional courses offered by schools, training centers or enterprises as well as to train course managers and supervisors;
- to provide specialization for educational and vocational counselors, psychologists, and teachers in general;
- to provide in-service training to all people involved in professional education;
- to carry out studies, research and data collection to offer up to date information on the educational systems;
- to provide technical assistance to any kind of institution in need of help;
- to supervise scholarship programs in the country and overseas, and
- to provide instructional materials and interaction with similar international organizations.

CENAFOR was administered by a Board of Trustees comprised of ten members that included five representatives from the Ministry of Education, representing industrial, commercial and agricultural schools, and specialists in administrative matters and legislation. There was also one representative from the Ministry of Labor, one from the Ministry of Planning and one from the state government of São Paulo (the most industrialized region of the

country and for this reason CENAFOR headquarters). Finally, two more members represented SENAI and SENAC.

In 1971, Brazil passed an educational act (# 5692/1971) that changed the logic and practice of vocational education. This act defined technical and vocational education as generalized for the entire secondary school. This reform broke a long Brazilian tradition when it stressed vocational education at the secondary level. This had never happened before in Brazil. The educational policy had substantial implementation difficulties, however, due to the models and points of reference that emerged for these professions in these processes. This educational dualism came from the hierarchy of social prestige. Instructors dealt with practical activities and in-service training while teachers, in charge of scientific matters, worked with the model of regular courses. Under the 1971 act, vocational and technical education teachers at last gained the status always enjoyed by general education teachers. Yet, even now, there are differences between different occupational clusters and areas of technical and vocational expertise. The instructors for manual occupations, rural and industrial sectors and basic and technical levels have a lower level of schooling. Higher levels of schooling are required to teach non-manual occupations and advanced levels. At the technological level, graduate degrees are required to teach. TVET politics and policies have been raising the status of instructors and teachers. The path towards Brazil's industrialization and economic development seeks the integration of academic and vocational education. However, this integration has not been completed, as TVET is still a separate sector, though it is linked to general education to some degree.

In fact, TVET is not completely regulated although it is much more developed and explicit under the present educational reform. Teachers, instructors and monitors who are prepared for the teaching assignment must administer subjects. They must have training in either previous courses or in-service training through special programs or regular courses in education at higher education levels. With input from the National Council of Education, the Ministry of Education has established rules and regulations for vocational training and for TVET teachers. The current General Education Act (# 9394/1996), and Decree (# 2208/ 1997) can be said to be milestones for a more systematic TVET in Brazil. Present legislation aims at promoting the transition between school and the world of work, in order to enable workers to perform with expertise in their specific fields of experience at every level of schooling – basic (primary school level), technical (secondary school level) or technological (post-secondary level). The reason that special programs, parallel to regular courses, are required is the shortage of qualified teachers in certain areas of knowledge or in some regions of the country. Qualified teachers are needed to carry out TVET on two levels: basic, to

qualify workers regardless of previous schooling and technical, to qualify prospective workers enrolled in secondary school or those already holding a school certificate.

The special programs to qualify teachers are addressed to candidates already possessing a university diploma in related areas as a solid basis for the specific technical area they choose. The higher education institution in charge of providing the training must check the compatibility of the special program with the previous scientific training of the candidate. An established curricular structure must include: a) a contextual nucleus, for the understanding of the learning process that takes place in a given context; b) a structural nucleus that incorporates curricular contents, sequential organization, evaluation and interdisciplinary capabilities, and c) an integrating nucleus, centered in the concrete problems faced by the students in the practical activities.

The organization of TVET courses at the university level faces an almost insurmountable difficulty: namely, that the productive sectors of the economy are numerous and diversified. In addition, the criteria for grouping economic activities are extremely volatile as the profile of the economy changes constantly. The choice of an area for the creation of a regular and continuous course is by and large an expensive prospect and this becomes rather problematic for the state and for the private sector as well. This is why educational systems have often opted for more diversified and flexible strategies for TVET training.

As mentioned earlier in this section, professional education in Brazil crosses over school walls. TVET is not just a matter for government and the business class anymore. As the country has advanced in its democratization process, preparation for work has been provided by enterprises, labor unions, community associations, social movements and churches and the “S” System (Senai, Senac, and Senar), in addition to state initiatives.

The most important labor unions in the country are developing in significant ways, which cannot be disregarded. The Central Única dos Trabalhadores (CUT) or Centralized Union of Workers is one of the four major Brazilian labor unions and has a respected tradition of professionalizing teachers for technical education in its own schools and workshops. By the end of the 1980s, it had established the CUT National Training Policy, as well as a program established to prepare groups of CUT educators made up of teachers, assistants and course managers. Since 1998-99, the program has been carried out on a national level in partnership with the Ministry of Labor. It has helped prepare people to work in TVET projects and has also aimed at distributing the pedagogical and political purpose of the CUT concept of integral education as well as CUT theoretical and methodological principles. This is done through courses and seminars as

well as in-service training, providing prospective teachers and instructors with knowledge and practice on topics such as teaching techniques, critical examination of the world from the worker's point of view, the world of work, social policies, planning and evaluation.

Another powerful union is the Força Sindical, or Syndicate Labor Union that assembles mainly metallurgic workers. This union maintains Occupational Education Centers concerned with preparing managers for professional education.

CGT, the General Confederation of Workers, has no specific programs for teacher training. The Confederation deals with teacher evaluation and defines criteria for teacher selection based on experience in adult education and labor union training.

Non-governmental organizations have developed teacher-training programs in an effort to confront the shortage of qualified people in professional education fields. One outstanding project comes from the Movimento dos Sem-Terra (MST) or The Landless Workers Movement. In order to perform TVET for its own activists and specialists, MST created two educational agencies. The first is ITERRA or the Technical Institute for Training and Agrarian Reform. The second is IEJC – the Josué de Castro Institute of Education. The name is a tribute to the late writer who published a well-known book on the problem of poverty and hunger in Brazil. Both Institutes are dedicated to TVET and to the preparation of teaching personnel as well. They work closely with local communities and are always concerned with technical expertise and political consciousness. Another noteworthy project is carried out by the Axé Project, aimed at the lower income population. Axé is an African word meaning “vital energy.” This project has a permanent center for educators and technicians. For these entities, TVET is conceived of as a dimension of human training and not simply as manpower preparation. There is a pronounced ideological orientation to these projects.

1.3 Contemporary Thinking

As mentioned at the outset of this section, the TVET teacher profile changes according to the teaching level: basic, technical or technological. The role assigned to TVET teachers is dictated by the modern concept of curriculum that seeks to make teachers capable of helping build multi-faceted skills. Methods are based on the principle that those who teach must first know how to do and those who know how to do and want to teach must also learn to teach.

The professionalization of teachers and lecturers faces opposing difficulties. On the one hand, economic and technological advances pose

greater demands on educational systems as far as scientific content and pedagogical expertise are concerned. This factor supports professionalization. On the other hand, there are a number of factors that limit professionalization. One factor is the social hierarchy of occupations that gives low priority to those at the manual level. Another is the difficulty in finding personnel with both pedagogical preparation and sound knowledge and skills in vocational subjects. Finally, there is traditional segregation between academic and vocational subjects rooted in the already mentioned social prestige ranking of occupations that persists in the curricula until today.

2. THE LABOR MARKET AND PROFESSIONAL EDUCATION STAFF: EMPLOYER INSTITUTIONS, JOB OFFERINGS AND COURSE DEMANDS

The education professional works on three levels: technological, technical and basic. This work is performed with registration requirements, specific goals and specialized certification. The technological and technical levels include structured programs that involve an interface between formal education and the working world. Through the variety of courses offered on the basic level, professional training activities often infiltrate through to more socially related activities.

Table 2-1. Percentage of Courses and Registration, by TVET Level, According to Administrative Area

Administrative Area	Technological Level		Technical Level		Basic Level		Total	
	Courses	Reg.	Courses	Reg.	Courses	Reg.	Courses	Reg.
Total	100	100	100	100	100	100	100	100
Federal	17.1	10.7	11.8	14.1	5.6	3.6	6.7	6.4
State	14.5	27.3	28.9	37.1	3.2	5.9	7.3	14.5
Municipal	1.6	1.0	5.3	5.2	3.4	3.9	3.7	4.1
Private – Total	66.7	60.9	54.0	43.6	87.8	86.6	82.4	75.0
“S” System	1.4	0.9	9.9	6.7	41.7	39.6	30.9	30.0

Source: TVET Census, 1999

According to information collected by a TVET Census with data from 1999 (MEC/ INEP/ SECC, 2001), professionalizing-level courses are offered in 3,948 institutions. Most of these courses operate on all three levels.

A portion of these is public institutions with marked involvement in the technological and technical levels. Another portion consists of private non-profit organizations that receive financial support from official resources, offering professional courses on a basic level. The majority of the institutions offering professional courses are private, 75 percent of the total. The next largest group consists of institutions maintained by states, 20.3% of the total, followed by municipalities, and 8.7 % of the total. Federal institutions account for 3.8% of the total.

Institution participation varies considerably, depending on the particular administration and the level of the program (see table 2-1). Private institutions prevail however; federal institutions stand out in terms of having more course offerings on the technological level (17.1%), although their registration numbers are lower. On the technical level, state institutions stand out by having 28.9% of the courses and 37.1% of the registration figures. This level is the only level where public institutions share the same number of course offerings as private institutions. The number for course offerings on this level for public institutions is higher than in private institutions, although there is only a minimal difference. On the basic level, private institutions dominate the scene with 82.4% of course offerings and 75% of registration. The “S” System offers more than a third of the courses on this level, 41.7%, and registration in the “S” System lies at 39.6%.

2.1 Courses and Registration on the Technological Level

There are 97,271 students in 433 courses on the technological level. Private institutions offer 289 of these courses, with 59,271 students. Total courses include: seven in the agricultural sector, with 625 students in 105 courses distributed among programs for Industrial Production, Chemistry and Civil Engineering in the industrial sector, 39 courses in the federal institutions, 32 in the state institutions and 33 in the private institutions. Municipal institutions are responsible for one course. The average number of students in each course varies considerably with 480 in-state institutions, 176 in federal institutions and 132 in private institutions. The courses that are the most well-populated are Electricity and Electronics (36 courses with 9,310 students), Mechanics and Metallurgy (20 courses with 6,642 students) and Civil Engineering (17 courses with 5,624 students).

The service sector unites most of the programs on the technological level with 74.1% of the course total and 71.9% of the students. There is a wide selection of course offerings which are grouped into Tourism and Hospitality, Transportation, Telecommunications, Computer Science, Administration, Health, Communication, Social Development and Leisure, Environment and Design. However, the registration numbers are strongly

concentrated in the area of Computer Science with 239 of the 321 courses in the sector and 82.3% of the students.

2.2 Course and Registration on the Technical Level

There are 5,018 courses offered on the technical level with 716,652 students. As already mentioned, courses and registration numbers are divided in an equal fashion between private and public institutions. On this level, courses are more dispersed than those on the technological level. The agricultural sector includes 343 courses and has 55,914 students. The courses in the agricultural sector are almost completely (86.3%) offered by public institutions, primarily federal and state institutions. The industrial sector offers 1,191 courses with 178,209 students. The “S” System stands out in terms of courses offered by private institutions, responsible for a third of the programs and registration numbers. In addition to Industrial Production, Chemistry and Civil Engineering, courses include Mining and Geometric. The major concentration of course offerings is found in the same areas as on the technological level with Electricity and Electronics (491 courses with 80,512 students), Mechanics and Metallurgy (255 courses with 36,658 students) and Civil Engineering (115 courses with 23,348 students). Another highlight in terms of course and registration totals is Petrochemistry (121 courses with 12,566 students). A certain homogeneity can be observed in terms of the average number of students per course. In general, this total is not more than 10% of the common average, independent of the administrative nature of the managing institution.

On the technical level, the courses aimed at the tertiary sector of the economy are subdivided into commercial and service areas. The commercial area includes 41 courses and the service area includes 3,434 courses and has 479,095 students. Course offerings are divided between public and private institutions and approximately 10% of the courses administered by private institutions fall under the responsibility of the “S” System. In addition to the previously mentioned areas, there are also programs in the areas of Art, Personal Imaging and the Environment. The Management sector is first in course offerings and registration numbers, 1,458 and 226,152, respectively. Accounting stands out with 865 programs, of these, 47.2% are offered by private institutions and 41.3% by state institutions. Next in order of importance, are the Computer Science courses with 796 programs and 120,227 students.

2.3 Courses and Registration on the Basic Level

Programs on the basic level represent a different universe from the other levels. Course offerings are extremely varied and so are time requirements. There is no specific period defined to complete the basic level. Because of the sheer volume of the students that attend these courses, the basic level courses represent the most indicative sign of employability for a significant portion of the population. Data from the TVET Census for this level underestimates the real dimension of course offerings and registration numbers. This is because of the difficulties involved with collecting information from such a large and diversified set of institutions. In 1999, the TVET census registered a total of 27,555 courses administered primarily (87.8%) by private institutions. The “S” System offers fewer than half of the courses (47.5%). It must be noted that federal institutions are the public institutions that participate the most even though they offer only 5.6% of the courses on the basic level. Registration totals in federal institutions for the year of the census were 2,045,234 students. This figure included 86.6% in private institutions, 45.7% in the “S” System and only 3.6% in federal institutions.

Table 2-2. Economic Sectors, Registration Distribution by Level and EPA in 1999 (in %)

Economic Sector	Levels			EPA
	Technological	Technical	Basic	
Agriculture and Animal Husbandry	0.6	7.8	2.9	24.4
Industry	27.5	24.9	23.7	19.3
Commercial	-	0.5	4.1	6.6
Services	71.9	66.9	69.3	41.2
Total	100	100	100	100

Source: Professional Education Census, MEC/ INEP and PNAD, 1999, IBGE

Course offerings and demand for courses at this level in the agricultural sector are also reduced, with 902 courses and 59,686 students. 36.2% of the courses are in the industrial sector. These totals are higher than the technological and technical areas, where there are 24.2% and 23.7% respectively. The most popular courses continue to be Mechanics and Metallurgy with 3,413 courses and 169,753 students. Of these, 58.5% are concentrated in the “S” System. The other areas with high numbers are Electricity and Electronics with 1,673 courses and 74,865 students; Civil Engineering with 1,310 courses and 69,618 students, and Textiles and Clothing with 1,041 courses and 53,309 students.

In the tertiary sector, there are 1,880 commercial training courses with 82,907 students. Of these, 59.2% are administered by the “S” System. The service training courses lead with 14,788 courses and 1,417,187 students. The Computer Science courses are the most popular of these with 3,670 courses and 463,080 students, representing almost one-fourth (22.6%) of the students on the basic level.

The registration data from the Economically Active Population (EPA) shown above demonstrates that the agricultural sector is strongly under-represented in terms of professional training. This is also true, to a lesser degree, for the commercial sector. In the service sector there is a large concentration of registrations at all three levels. This represents a number that is proportionately much higher than people who are currently employed in that part of the production sector.

Table 2-3. Total Number of Teachers and Instructors and Percentage of Teachers and Instructors with Advanced School Degrees, According to Administrative Dependency

Administrative Dependency	Teachers			Instructors		
	Total	With Advanced School Degrees		Total	With Advanced School Degrees	
		Total	%		Total	%
Total	76,787	63,174	82.3	24,085	11,585	48.1
Federal	9,858	9,384	95.2	582	461	79.2
State	26,365	23,005	87.3	2,515	1,814	72.1
Municipal	4,034	2,866	71.0	1,219	315	25.8
Private - Total	36,530	27,919	76.4	19,769	8,995	45.5
“S” System	2,620	2,224	84.9	12,260	6,161	50.3

Source: TVET Census

3. THE PROFILE OF THE PROFESSIONAL TEACHER EDUCATION

The 1999 TVET census did not collect much information on the teaching staff. The census did not include sex or age, for example. However, data on schooling levels and the type of institution they worked for were collected and can be found in Table 2-3. It should be mentioned that this data was

collected nationally and some of the information is only partial, depending on the region.

76,787 professors and teachers and 24,085 instructors guarantee the offering of 33,006 courses. Advanced education degrees are found among most teachers (82.3%). This number rises to 95.2% for teachers in federal institutions. The lowest percentage for teachers with advanced schooling is found in the municipal institutions at 71.0%. There is considerable variation found among teachers in terms of education levels and this depends highly on the type of institution examined. Federal institutions account for the largest contingent of instructors with advanced school degrees (79.2%) and municipal institutions account for the smallest contingent (25.8%). The general average (48.1%) is influenced primarily by the levels in private institutions with the largest number of instructors and with the largest number of instructors with higher education levels.

3.1 The Governmental Plan for Professional Education

TVET programs, especially those focused on manual labor, have historically maintained strong ties with the fight against poverty as well as to serving adolescents from working-class families. These programs have aimed at guaranteeing entrance to the labor market in occupations that are often related to the occupations the adolescents' parents held. This scenario has changed considerably, and professional training today represents a considerable change that has been strongly influenced by different degrees of incorporating new technologies in the production of goods and services. The programs at the top of the pyramid are linked to the most modern areas of the economy. They include the use of cutting-edge technology and use teaching techniques that include the latest technology. However, the social stigma for professional training remains, especially in countries marked by poor distribution of wealth. This is the case in Brazil where projects receive support from public policies. The characteristics and functions of these types of courses define the requirements that must be fulfilled by the teaching staff. Stratification in the courses defines salaries, management and social prestige for the teaching staff.

Professional training in Brazil has taken place according to the guidelines of the Ministry of Labor and Employment's National Plan of Professional Training (PLANFOR) since 1995. The plan's programs are for the basic level and aim to meet the demands the labor market has for qualified workers. At the same time, these programs have a strong social component in terms of helping decrease poverty and social exclusion through training. This is developed in ways that incorporate regional differences and differences among specific segments of the population. The primary focus of

the plan consists of training the unemployed and workers that are at risk of unemployment to work in areas that are undergoing re-structuring and/ or modernization. Another priority for the plan is to train informal workers who are often really in an unemployment situation as well as small urban and rural producers. The plan seeks to promote equal opportunities for people in these situations, both in the labor market and within TVET. The focus is on the most vulnerable segments of the labor force. These are identified as people in poverty situations (with no income or with a monthly income of half a minimum salary, around US\$ 80 in May, 2003); people with less than seven years of schooling; people between the ages of 16 and 21 (corresponding to first time job seekers), people over 40 years of age; the physically challenged, women in general, and black, mixed race and indigenous women in particular, as well as women who are heads of households. The plan's goal is to train and qualify 20% of the labor force (around 14 million workers) annually. This goal has not been reached but there are some impressive numbers nonetheless.

In order to comprehend this extraordinary breadth of segments and demands, the plan has mobilized an extremely diversified set of institutions and teaching staff. There are links to universities, labor unions, technical schools and non-governmental organizations (NGOs), in addition to the traditional professional training agencies and the "S" System agencies. The PLANFOR guidelines include developing and strengthening new sectors in the field of professional training as a way of guaranteeing service to a potential clientele that is large, disperse and diversified. In the year 2000 (cf. MET/ SPPE/ DEQP, 2001), courses were administered and financed or supported by PLANFOR including 2,146 agencies, as shown in Table 2-4.

The time requirements for courses are extremely varied. The lowest is 3 hours and the highest is 915. The average time requirement is 62 hours. MET recognizes that the length of the course is one of the indicators of quality and on average, the programs supported by PLANFOR are reduced in terms of time requirements. However, when a program of continual training is taken into account, as is the case of the constant plan programs, the most important item to examine is the time, to see if it was adequate for the content and the target. These are aspects that are still under evaluation. On the other hand, the average dropout rate for the courses is 3%. This is a low number in the context of similar programs both in Brazil and in other countries where 15% and 20% rates are commonly found. This is often caused by the instability of the living and working conditions of the vulnerable population that these courses serve. Added to this consideration is the fact that 77% of those trained must overcome schooling deficiencies in order to improve their ability to learn technical skills.

Table 2-4. Profile of the Executors of the Programs for Training and Qualification, Numbers, Those Trained and Investments in Percentages for the Year 2000

Types of Agency	Agencies	Those Trained	Investment
“S” System and other business organizations	51	25	26
Workers’ organization and labor unions	8	26	25
NGOs	22	22	21
Universities, faculty, institutes, foundations	7	14	13
Technical schools and free professional training entities	6	9	8
Other	6	4	7
Total (%)	100	100	100
Total (absolute values)	2,146	3,141,000	R\$ 394 million

Source: PLANFOR 2000, Management Report, MET/ SPPE/ DEQP

This extraordinary professionalizing effort on the part of MET can be linked to two tendencies described by Cinterfor (2001). The first is the “devaluation of educational credentials,” which means that educational credentials are losing their relative value as instruments of access for specific jobs, salaries and social prestige. The second tendency is “running on the treadmill,” which states that it is becoming harder and harder to reach the qualification levels necessary to guarantee equal opportunity. This involves a phenomenon called the “educational spiral” that is applied in the field of professional training. Another tendency emphasized by Cinterfor regards the search for professional differentiation based on the construction of an original profile where, in addition to formal education, a combination of technical courses is included. This search encourages the emergence of a private market that will attend to this construction through courses that demand low investment and do not necessarily train professionals that are in demand in the market.

4. TEACHER TRAINING FOR THE BASIC LEVEL: THE “S” SYSTEM

Brazil was the pioneer in Latin America in terms of structuring national systems for professional training or the “S” System, as mentioned above. SENAI and SENAC, established in the 1940s, enjoyed a privileged financial situation for a long period, which allowed them to construct a network of professional training units and specialized personnel, entrusted with developing, testing and improving the methodologies that focused on

instructor training. These methodologies were formed and adapted by similar second-generation institutions that emerged later with activities in agriculture (Senar), transportation (Senat) and small businesses (Sebrae). The “S” System institutions all shared the fact that they were maintained through mandatory contributions that were taken directly from paychecks in the cases of Senai, Senac and Senat. Mandatory contributions were calculated on farming business profits in the case of Senar. These institutions had very different trajectories that gave them very different specific identities. Their characteristics were defined in large part by the production sector they were linked to. This has had an important impact on recruitment and training of the teaching staffs. Senai activities have always focused on attending to the demands of businesses by providing qualified personnel, encouraging stable course offerings and teaching staff. Senac focused on attending to the demand of training students to perform a profession in the commercial or service areas. This involved more flexibility in Senac course offerings and in teaching staff. Senar and Sebrae hire professionals for specific programs, involving an agenda rather than professional training centers. Senat acts exclusively through distance education (cf. Castro, 2000).

The dynamic that drives program definition for professionalization courses is driven by response to requests from a market that is constantly changing. There are widespread needs in geographic terms and even if the institution has established personnel, the teaching staff needed for program courses is never complete. Permanent staff is usually comprised of specialists in education and teachers in the pre-requisite subjects like Portuguese and Math as well as instructors in the other offered courses. The job market is the locus for teacher recruitment and involves technical knowledge and coursework knowledge. The difficulty for the administrative institution is to guarantee that the specific professional experience of the instructor reaches the students.

Building a bridge between professional and pedagogical experience has been a challenge for the pedagogical staff of the professional training institutions. CENAFOR and the International Labor Organization have both played a part in this construction. Since 1963, the Inter-American Center for the Investigation and Documentation of Professional Training (CINTERFOR) in Montevideo, Uruguay has played a major role as well. This organization is part of the International Labor Organization and Senai and Senac both have positions on the CINTERFOR’s Technical Committee. CINTERFOR is the nucleus of a system that is made up of formal training institutions and the ILO member states in Latin America, the Caribbean and Spain. The system links efforts and encourages experiences and their distribution. It also develops and supports professional training studies in the geographical area under its jurisdiction.

The development of methods, techniques and instructional materials for professional training and teacher preparation has greatly improved over the past four decades. This has been performed in large part by the “S” System and has represented significant support for scientific and pedagogical development. This support has been successfully taken advantage of by formal education institutions.

4.1 Pioneering and Innovation: The Senai Trajectory

Professional education in Brazil began to take shape in the beginning of the last century with the spread of the ideology of industrialism. This ideology associated the industrial process with a series of virtues such as economic emancipation, democracy and civilization. It was through industrialization that Brazil rose to the level that included the most civilized and developed nations of the time, like the United States. In 1909, this belief caused the Brazilian federal government to create crafts and apprenticeship schools in each state in Brazil. A decade later, in 1919, the Wenceslau Brazil Normal School of Arts and Workshops was created in order to train teachers for the crafts and apprenticeship schools. Another landmark in professional education was the creation, in 1931, of the Ministry of Health and Education’s Inspector’s Office for Professional and Technical Training (cf. Cunha, 2000).

The institutionalization of professional training really only began to become effective with the creation of Senai in 1942. Senai incorporated the experience of the Professional School of Mechanics and Arts and Workshops of the Liceu of São Paulo, which was created primarily to serve the demand for qualified personnel in the railroad transportation companies. Senai brought the Swiss engineer Roberto Mange from the Liceu to be one of the two creators of the school responsible for introducing a series of methods that became the backbone of the pedagogical project for decades. This series of methods was described in an instruction booklet that contained basic information about the operations and technological knowledge related to specific occupations. To highlight the didactic importance of this series, Cinterfor mentions that in the 1970s, there was a group of specialists who developed operating sheets and technological information bulletins with instructions that were distributed in Latin America. Many countries had difficulty developing these methods. Mange was the first technical director of the São Paulo Regional Office of Senai. The state of São Paulo was the largest industrial producer in Brazil at the time and remains so until today. This pedagogical model created in São Paulo was part of the National Department of Senai and was distributed to the regional departments in all of the other federal units in Brazil. (cf. Senai, 1994)

In the case of the other members of the “S” System, the relationship between the national director’s office and the state units was defined through consensus and dispute. Disputes were more common in the states with more significant economic power. The first four decades of Senai’s existence involved uncontested technical leadership from the National Department of Senai. This allowed the methodology on the series of methods to be distributed all across the country through the Instructors Training and Improvement (FAI) program. In the 1980s, regional director’s offices began to develop their own identities with projects and models of differentiated types of teaching.

In the 1990s, there was an international trend for skills training and Senai followed this trend (Senai, 2002). The new model was established as a pilot study in nine states and remained in place until 2002. The National Department of Senai validated the results of the study and the necessary adjustments were passed on to be applied in other states. At the same time, the Training the Trainers Program was launched, focusing on Senai teaching staffs as well as on teaching staffs from other institutions. In PLANFOR, one of the attributes of Senai was to prepare instructors from the institutions determined by MTE. Training the Trainers was a distance-learning module that utilized printed material and a tutor for every 20 students. This program involves three structured steps. The first, or the Basic step, gathers information on Senai (optional), the world of education, knowledge, the working world, current concepts of professional education, education and citizenship. The second step, Education, involves research and analysis of the demand for professional education, an educator’s diary (class plans and meaningful content for education), educational methods, the educator/ student relationship and educational evaluation. The third step is on Management and focuses on strategic negotiation management, the human dimension of work and human resources management. There are four transversal modules on information and knowledge management in society, accident prevention and the prevention of work-related illnesses, educational progress and environmental education (Senai, 2001).

Senai has traditionally maintained its own established teaching staff. Teacher turnover can, however, be caused by loss of personnel due to recruitment from the industry for technical functions or training within a company. The “extra” employee or teacher has been a recent phenomenon in the institution. These individuals generally perform highly specialized activities as a result of consulting services or research and development recently established in the National Technology Centers.

During its 60 years of existence, Senai has built a powerful structure in terms of installation, equipment and tradition in the professional training field. Senai offers 1,800 programs and there is an average annual registration

of approximately two million students (2002) in the different modules and courses Senai offers. Senai has 241 Professional Training Centers, 311 Mobile Units, 46 National Technology Centers and other sites (cf. site from 06/10/2003, www.senai.br). These centers combine educational activities with technical assistance and applied research. The centers are technological incubators founded on the belief that productivity and competitiveness in business depend on the introduction of new technologies. This means that they are centers for the distribution of new technologies. Senai offers higher-level courses through the centers.

4.2 Senac and Multi-Faceted Training

Created slightly after Senai, in 1946, Senac went through the same stages Senai did. Senac initially concentrated on educating youths who had finished primary school and needed to join the labor force immediately. (Sussekind, 1972). In recent times, the expansion of activities at Senai has been stimulated by an increase in businesses that have subsidized them as a result of subcontracting a series of activities that had previously been performed by industrial businesses. Another stimulating factor was the development of computer services. Growth in this service sector made the institution adopt a considerable flexibility in program offerings, and to constantly seek “extra” instructors. This made strong investment in didactic training of these personnel imperative.

A text from the beginning of the 1980s on instructor training seems extremely up to date in terms of the problems it mentions. This is proof of the gravity and persistence of problems such as a) Senac’s small percentage of instructors from the workplace who are prepared to administer the extremely diversified range of courses; b) the only option for reasonable recruitment is to admit professionals with experience in their field of specialization and this type of professional usually has little or no pedagogical training or didactic experience; c) good course organization and monitoring without support of an up-to-date educator will not allow for course success; d) it is impossible to recruit good staff and keep them without an attractive salary policy; e) adjunct instructors rarely learn the true characteristics of the institution and are usually not open to pedagogical, educational or professional orientation, often because of the short time they spend linked to the institution. (Jesus, 1981, p. 229)

Senac also began to train skills and, beginning in the 1990s, Senac adopted the multi-faceted policy as a pedagogical proposal. This type of training is understood as the ability of the learner to perform a number of qualified activities. This requires that the learner understand general scientific and technical bases as well as socio-economic elements of

production. This combination is studied in order to allow the learner to acquire both general and specific abilities. This focus assumes a curricular module with a structure that includes multiple combinations involving different dimensions of work. This is clearly an ambitious proposal and it assumes that the learner already has a solid educational base. As this is not always true, Senac has had difficulty establishing this proposal.

In 2002, Senac had one million eight hundred registered students in its 489 training centers in courses developed by the 60 mobile units or in distance education modules (cf. site from 06/10/2003, www.senac.com.br). At the end of the 1980s, Senac launched its first advanced level course in Hotel Technology. Presently, the Senac schools offer bachelors courses and technology courses in seven schools in the State of São Paulo. They have a business incubator that is linked to the Center for Computers and Telecommunications for the State of Rio de Janeiro. This center's proposal is to encourage solutions aimed at increasing service productivity and quality.

4.3 Making Up for Lost Time: The Senar Challenge

The agricultural sector is the principal economic sector in Brazil and until five years ago this sector occupied 24.2% of the EPA. Even with these facts and figures, the agricultural sector has received little attention in terms of professional education that is able to train people in a way that will increase productivity and modernize the sector. Senar is here equivalent to Senai and Senac in the agricultural area. After a few unsuccessful experiences, Senar was created in 1991 and established in 1993.

Senar is different from the other organizations in at least two ways. The first is that part of its social assistance activities involves the rural worker. In the case of industry and commerce, these activities are performed respectively by the Social Service for Industry (SESI) and the Social Service for Commerce (SESC). The second refers to the fact that Senar does not have a network of professional training centers or a fixed teaching staff. Instructors are hired for each specific program and all instructors undergo 40-hour training periods that are given by a specialist from Senar or a member university using the "Methodological Series." This series includes 13 documents with information on Senar and the working world and occupations in the rural area. They also include information on social promotion of the rural worker and directions on educational procedures. These procedures are covered in a "Methodological Training" section aimed at providing a foundation for the instructor in methodological activities and class planning (cf. Costa, Spagnolo and Carnielli, 2002). Senar recently adopted distance training via Internet for instructors, supervisors, specialists

and managers in the area of rural administration. The programming is made up of nine modules that incorporate rural administration, economic analysis of rural businesses, and quality management in agriculture, agricultural policies and rural cooperatives.

The Senar structure is certainly economic and agile. Senar's financial resources are precarious at best, in comparison to Senai and Senac, yet Senar adapts to these circumstances. However, the issue of creating an organizational culture is problematic given the circumstances. It is difficult to accumulate solid consolidated contributions from instructors in terms of experience and knowledge that would benefit the institution in that candidates and instructors are hired according to immediate needs for specific programs. This issue is true for all of the initiatives that use teaching staff hired on a temporary basis. This type of hiring is true for the majority of private basic professional training.

5. PRACTICE OF TEACHING AND INSTRUCTION AND PROFESSIONAL REALITY WITHIN THE INSTITUTIONS OF TVET

Other than the non-governmental sector, the most important employer of formal TVET teachers is the pioneer federal system. This system serves as a standard for all others. The first generations of teachers in the early twentieth century were composed of qualified professionals who worked in general education as well as in more scientifically related subjects of the curricula. Most of the vocational subjects were taught by instructors, i.e., former blue-collar industrial workers who had related experience and somewhat intuitive skills for teaching. Personal recommendation was the basic means of access for these civil service posts. In the beginning, teacher education was nonexistent. Informal contacts in the work milieu were the most important means for learning pedagogical skills. Learning by seeing and doing, added to some readings of the pioneer literature, made up the methods for in-service informal training. This state of things gradually changed with increasing economic requirements, as well as improvements to education sciences and educational policies and institutions. Most technical schools have, since the 1990s, been transformed into technological education centers, offering post-secondary and graduate programs for primary, secondary, and advanced economic sectors. Today the federal system has technical schools, agricultural technical schools (both offering secondary level TVET) and technological education centers (offering secondary and post-secondary education programs, as well as graduate programs in

technology and technological education). This development has been so remarkable that one of the leading institutions in the federal system, the Paraná Federal Technological Education Center, has so many post-secondary and graduate programs that it has proposed becoming a technological university to better meet demands. This increased sophistication in TVET offerings, combined with technological and economic advancement has led to a rise in qualification for the teaching staff. As a matter of fact, they are divided into basic and higher education. The minimum requirement to teach basic education is a four-year college degree. For higher education, a masters or doctoral degree is essential, depending on the level of technological education, research and services provided.

The recent Federal Constitution established access to civil service employment through public entrance examination, composed of tests and curriculum vitae analysis. Initially centralized, these entrance examinations are now organized by federal technical schools and technological education centers under the formal authorization of the Ministry of Education. In fact, TVET federal institutions have enjoyed relative autonomy in terms of budget. Today, teachers are generally recruited within their professional areas. Candidates are graduates of higher education institutions involved with their field of work. Each entrance examination may adapt to regional and sector circumstances in order to be relatively flexible. They often require a higher education credential in the technical field, work experience and teacher education. The last requirement is difficult to obtain in many fields and may be a postponed requirement in some cases which can be fulfilled after the candidate's admission. Without this coda, many of the posts would remain vacant, as some in fact already do. Involvement with the labor market and higher education preparation are essential demands that need to be satisfied. Potential teachers and professors are very often involved with their fields of work and many of them may not have previous teaching experience. Therefore, a teacher training program funded by the federal system may serve as a necessary rite of passage for an otherwise experienced professional.

Depending on their activities in basic or higher education, teachers have two options in their career once they are admitted. They may work part-time (20 hours per week) or full-time. The full-time category may include an exclusive dedication requirement. This is a widespread practice as many professionals in Brazil have more than one job for additional earnings. This requirement is seldom damaging in terms of relationships with the labor market and professional recycling. Career advancement basically depends on academic degrees and the number of years spent teaching. As a result, teacher and professor positions require advanced teacher training and masters and doctoral programs either from Brazil or abroad. Pedagogical

preparation is a serious concern among administrators. Teaching credentials obtained in the previously described program, is a *sine qua non* condition to remaining on the job after admission. Schools and centers offer or contract with higher education institutions that offer such programs. Specific teaching preparation is so important that the Ministry of Education has just proposed a new credentials program, called *licenciado técnico* (licensed technical teacher) based on the importance of pedagogical skills for educational process success and for identification as a faculty member.

Further educational opportunities are one of the career highlights in the federal TVET system and financial rewards are received for credentials. The same is not true for other alternatives, however. These include seminars, short courses, workshops and internships. Institutions are independent in developing their own pedagogical projects and this includes a continuing education sub-project for personnel. Although these sub-projects involve a wide array of activities, personnel may still need incentives for involvement, since the career plan does not provide them.

In a dynamic system, admission by public entrance examination is not the only alternative for becoming a teacher/ professor. This is true not only for the federal TVET system, but also in the large state systems. In addition to virtually permanent hiring, legislation allows for three other kinds of labor contracts of up to two years: substitute, invited and visiting teachers/professors. These positions fill in the gaps and bring new blood to the educational institutions, favoring relationships with enterprises and research institutions. These alternatives are also fast, flexible means of filling the vacant posts when and where there are no other appropriate personnel available. The past administration considered the rules for conventional civil service too strict and preferred to expand these categories. This raised the proportion of these teachers/ professors to about 15-20 percent of the total. This is regarded as a high percentage, since the maximum accepted limit for substitution personnel in training is 10 percent of the total in each institution. However, the new administration has carefully assessed the increased costs incurred by this option as well as other possible disadvantages.

This issue brings up the question of salaries and system competitiveness in the labor market. As a matter of fact, financial compensation has not been a great attraction of TVET throughout the country, at least in the public systems. Salaries are often low in relation to those offered by private business, making it hard to attract and to keep highly talented people. Recruitment and selection are particularly difficult for more recent professional areas and subjects. Geographically, the critical areas are the hinterlands in general and the Amazon Valley. The most developed areas where private industry pays higher are also critical. A beginning, full-time basic TVET teacher earns US\$ 610 per month (thirteen times a year) gross.

An average, full-time teacher with a master's degree and full class load has a monthly gross salary of US\$ 1,155 (before about 37.5 per cent deductions). These values correspond, respectively, to 2.49 and 4.71 times the per capita GDP estimate for 2001. The higher education career has an increase of approximately 10 percent of those values. The results of a restrictive fiscal policy, in light of high foreign and domestic debts, have not been positive for TVET. The civil service is at a clear disadvantage compared to private business and this results in a range of 10 to 30 per cent vacancy level. This results in an overload of teaching activities for remaining personnel. Moreover, salaries cannot vary by curriculum subject or occupational area and this rigidity does not improve the shortage of professionals caused by better remuneration from private businesses.

Teachers and professors deal with these difficulties in different ways. Most TVET institutions are prestigious institutions with active participation from regional businesses. The administrative boards have community representatives that play an active role in interaction with leading educational managers and faculty members. Consequently, this brings new knowledge and skills directly to schools/ centers. It also brings about agreements for selling services and technologies, especially where research and graduate education is exemplary. These agreements may represent additional income for the involved personnel. Furthermore, part-time teachers/ professors may be small business entrepreneurs or consultants in a second part-time job.

Teachers' and professors' duties vary greatly depending on the institution. The teaching load is usually higher, sometimes even over 60 per cent of the load, for technical schools. Decentralization has been a remarkable process in the system and each institution has a relative freedom to make informal adjustments. Some may compensate for the scarcity of personnel in selected areas with complementary activities like student counseling, services to the business community and administrative duties. This last activity is a typical part of any educational institution and includes things like coordination and supervision of projects and activities, as well as participation on numerous internal boards and committees. The situation may be very different in the technological education centers, in particular those where advanced research is practiced in doctoral and masters' programs. Teaching hours are correspondingly lower in these situations yet there are extremely high demands made in terms of research projects, publications in the best journals and thesis and dissertation advisement.

Teachers and professors are also often involved in curriculum development, deeply related to the changing needs of the labor market. The institutional board plays a key role in this area. The integration of academic and vocational learning is subject to the guidelines of the latest reforms. As

described before, general and vocational/ technical education has always been separated in different courses and programs in educational system organization. Technical schools still offer both types. A number of the students have double enrollment and others are enrolled solely in a vocational/ technical program. Of course, the integration of academic and vocational learning is more difficult now, But curricula coordination minimizes difficulties. Furthermore, depending on the institution, short, topical programs and modules on general education are directed towards those students who have difficulties, generally because they attended secondary education at another school. Following decentralization guidelines, the pedagogical project of each institution has processes for internal organizational evaluation. These processes, led by teachers/professors, have the participation of the various parties involved. These include members of the community like employers, employees and other agents. The importance, complexity and size of these processes depend on the institution. Of course, internal evaluation is simpler in technical schools than in technological education centers. In regard to external evaluation, the Ministry of Education organizes strict external evaluation for higher education. Programs are ranked by quality of input and results, in particular for masters and doctoral programs. External ad hoc committees may visit institutions periodically to authorize openings and to follow up on their work. If not, detailed reports from the institution are analyzed and commented on by specialist ad hoc committees. Most teachers and professors are unionized. Professors are members of the National Association of Higher Education Professors and teachers are members of the National Union of Federal Education Civil Service Employees. Most of the TVET institutions have their own association for the discussion of common issues. As research is an important activity, faculty members contribute to different scientific societies, especially the Brazilian Society for Scientific Advancement. A high number of technical schoolteachers, even from the rural sector, are also involved with scientific societies, as a result of their participation in applied research and development.

Besides the century old federal system, most states maintain TVET systems. In general they mirror the federal system in terms of organization and dynamics. However, there are differences that make generalizations difficult. The industrialized states in Southern and Southeastern Brazil develop most efforts in the area, offering TVET, post-secondary education and conducting technological research. The largest one is Paula Sousa Technological Education State Center, with an enrollment of 86,803 students in 94 counties of the State of São Paulo (27.3 percent of them in general education, almost all of them in TVET and 0.1 percent in technological education). Nevertheless, some of the poorest states in the federation also

have significant systems, like Ceará, in the Northeastern region. Science and Technology Secretariats, special superintendents in Basic Education Secretariats and other institutional arrangements manage those systems.

6. STATE OF THE ART AND FUTURE PERSPECTIVES FOR PROFESSIONALIZATION

Industrialization and urbanization have been the most important determining factors in upward mobility for TVET teachers and instructors. The stigma against manual labor has been gradually overcome to the extent that non-traditional occupations have become increasingly important. Although the first steps of industrialization occurred in the early twentieth century, TVET teachers did not gain status parity in relation to their colleagues in academia until 1971, when an educational reform emphasizing vocational training in secondary education established initial education programs with status parity in relation to academic teachers. There have been investments made in initial and continuing education, particularly by the federal and other public systems and by some “S” System institutions, especially SENAI and SENAC. Nevertheless, teachers are still underpaid in the public systems and the entire TVET sector suffers from competition with private business. This is a real threat for the future of the country as there is already a relatively low average level of schooling in Brazil. In addition, the labor force may not have the best teachers and instructors for every occupational level or sector. Of course, Brazil’s international competitiveness will be negatively affected, despite the existence of numerous islands of excellence in the public and private TVET systems. This means that TVET faces the same challenge general education does. This challenge involves the traditional priority given to access and relative indifference to quality and equity. In a country of enormous contrasts, the informal sector of the labor market generally includes undereducated and under qualified workers, whereas the formal sector gathers those who have better educational opportunities. This is especially true in the most sophisticated areas directed toward exports. Brazil has the ability to absorb and even generate sophisticated technologies. However, this capacity is limited and involves accentuated sectoral, regional, and social disparities. However, it is worth noting that Brazil is conducting a large TVET improvement project, funded by the Inter-American Development Bank (US\$ 500m) and public sources (another US\$ 500m). Although spending has been restricted by fiscal policies, it will certainly have positive repercussions, particularly in terms of infrastructure and continuing education for teachers and instructors. Furthermore, the new federal

administration is going to evaluate policies directed towards building better relationships between academic and vocational and technical education. This change will encourage equity and quality.

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Chapter 3

CHINA'S TVET TEACHERS AND THEIR PROFESSIONALIZATION

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1. THE DEVELOPMENT OF CHINA'S TVET TEACHERS' PROFESSION

China has a long history of handicraft, but a mature apprenticeship system has not been developed. The beginning of China's vocational education system came into being with the set-up of China's vocational schools. During the Westernization Movement (yang wu yun dong) in the 1860s, the Qing Dynasty (1616-1909) began to establish and develop a modern military, as well as mining and transportation industries and industrial schools. Factories were set up during that period to train skilled workers and technicians. Afterwards, in 1904, the Qing government issued The Constitution of Imperial Schools (zou ding xue tang zhang cheng), which brought industrial education in line with the formal education system. This action initiated the establishment of China's school-type vocational education system. The present vocational education system is based on that system, which characterizes its full-time and various other levels of vocational schools as the core, attached to short-term vocational training (Li, Lingtian, 1994).

In China, the Confucian idea that "Those who do mental labor rule and those who do manual labor are ruled" (lao xin zhe zhi ren, lao li zhe zhi yu ren) had a deep influence on the Chinese traditional knowledge-oriented idea. Even today, the practical or manual occupations are generally looked down upon. Furthermore, China's present college entrance examination

system, which selects future scholars, is giving rise to one-sided interpretation of what a talented person really is. There is a tendency towards the belief that only a person who goes to college or university can be called intelligent (Jiang Zemin, 2000). Such a narrow opinion has greatly affected the development of a healthy coordination between education, economy and society. It is generally considered that vocational education is merely the education of failures in college entrance examinations, rather than an effective way for a person to become educated or realize his value, and there is evidence that such a tendency is becoming more and more serious and is causing a series of social problems. In the economic field, structural unemployment has become an issue, that is, there is an increasing and urgent need for practical, high-qualified employees while high unemployment still exists for former workers and even for graduates.

China's teaching body of TVET was the product of the establishment and development of vocational schools in which technical workers were specially trained. In its early period, the Qing Dynasty government, considering the lack of TVET teachers and the experience of such educating and training, decided to select exceptional young persons and send them abroad to learn TVET principles, and after they returned, engage them in TVET. Acting as multipliers in the education and training of TVET teachers, they were responsible for training institutions. The Constitution of the Imperial Industrial Education and Teacher Training Institutions (*zou ding shi ye jiao yuan jiang xi suo zhang cheng*), issued by the Qing government, created fairly definite regulations for the training of TVET teachers of different courses and of different levels. From the present point of view, we find lower standards for TVET teachers at that time, for example, the duration for the primary vocational education teachers were only between one to three years according to different vocational fields, but they were actually fairly high requirements compared to the whole national education level at that time. Furthermore, the education and training of teachers of vocational high schools, targeted at the highest diploma level from the very beginning, played an active role in the building and development of a body of TVET materials and of teachers' professionalization.

In the development process of a TVET teaching profession for China, Huang Yanpei² (1878-1961), an outstanding social activist and professional educator, and the Chinese Vocational Society (*zhong hua zhi jiao she*) he

² The China Vocational Society, founded by Huang Yanpei in 1917, was the first vocational education organization in China consisting of people from the educational field as well as from the economic circle. So far, it has developed into 26 local organizations all over China, which are still having a certain influence on China's TVET field.

founded played an important role. He and his society advocated a “vast vocational educationalism” (*da zhi ye jiao yu zhu yi*), which included reforming the traditional education style, which was separated from production, practice and social activities, and demanding that the TVET teachers take part in political reforming activities, and pay more attention to workers’ needs and interests. All these transcended the scope of merely teaching required academic knowledge and skills and extended the description of TVET teachers’ profession (Li, 1994). Therefore, higher demands were set for TVET teachers to engage them more in the design and reforming of the technological and social systems.

Since the establishment of PR China in 1949, the development of China’s TVET teachers has been a complicated process. In 1958 an education reform was issued, stating that education should be combined with production (*jiao yu yu sheng chan xiang jie he*). The reform put forward the quality principle of simultaneous development of state-run schools and ones run by factories, mines, enterprises and agricultural companies, which broke down the unitary pattern of school education. As a result, TVET teachers were required to combine their knowledge with production and practice in their profession.

With the development in the whole TVET field, the Chinese government has posed quite a few principles and regulations with respect to the building of a TVET teaching body, since China’s reforming and opening policy in the 1980s. The “Teacher Law” (*jiao shi fa*) and “Vocational Education Law” (*zhi ye jiao yu fa*), issued in the 1990’s, provide legal guidance for the building and development of China’s TVET teaching body. It can be summed up that in the process of China’s TVET establishment, development and professionalization, the government’s wise policy and the schools’ sound development conditions are vital elements for acceleration. The other elements, which have impeded the process of China’s TVET development and its professionalization, originate mainly from the following factors:

- National lower recognition of TVET;
- Unscientific and inconsistent policy on TVET;
- Lack of politically-influential organizations of TVET teachers.

Deeply influenced by the traditional idea that “all occupations are base, only book-learning is exalted,” (*wan ban jie xia pin, wei you du shu gao*) most high school students’ first choice, along with their parents’, is to go to university or college, rather than considering vocational education. Thus, it is natural that the importance of TVET teachers in the development of the society and economy is ignored. On the other hand, teachers as a whole are respected as “the engineer of the human soul” while at the same time relegated to a lower social position. The view of what a teacher should be takes the place of the view of what a teacher really is. Besides, teachers at

the present time are measured according to the ancient Chinese teachers' reputation and professional code of ethics.

Now that the market-oriented economy is impacting society, there is not enough respect for teachers and their professionalization. Excessive demands are made on teachers while they are supposed to live and work contentedly as poor scholars.

At present, the income and living standard of general teachers belongs to the lower middle class in China. Some teachers have to take up temporary manual jobs or services in their free time or holidays to make up for the shortage in income. Generally speaking, teachers or students in teachers' colleges or universities come from the middle or lower classes of society. The graduates from teachers' colleges or even the teachers, once given the chance, are ready to "jump out of the education circle". The unwillingness of excellent young people to be teachers adds more difficulties to the task of improving the teachers' level as a whole and the quality of the teaching body, and consequently determines the teachers' social positions. Thus a vicious cycle is formed in China's education circle, especially in TVET.

Furthermore, due to this lower social and economic condition, some teachers, especially young teachers, are not engaged thoroughly in their jobs, which is one of the unsteady elements in TVET teaching. Accordingly, the outflow and invisible outflow of TVET teachers is becoming more and more serious. The fact that old teachers retire and young teachers quit their posts has become the hidden troubling issue in the Chinese TVET teaching body (Zheng, 1998; CIVTE, 1995).

At the moment, China's teacher administrative system is neither perfect nor fair; specifically there exists a great difference in regulations of employment promotion regarding general education teachers and TVET teachers, which causes the TVET teachers to feel inferior to general education teachers. A case in point is the reform of the education structure in the early 1980s. During that time, a great number of general schools had a comparably lower rate of graduates entering colleges or universities and were therefore changed into vocational schools. In addition, many teachers who taught general subjects (Chinese, mathematics etc.) and even some unqualified teachers had to teach specialized courses in vocational schools. That was the inadequate natural endowment in specialized-course teachers in vocational schools. Although, nowadays, China's "Teacher Law" requires the teaching qualification system to be practical in theory, it is not so in practice. In fact, there are no definite regulations for teachers' professional standards or duties. More importance is attached to the teachers' qualified diplomas or degrees. The coherence of the teacher's major with the required courses he teaches is ignored.

As the result, unqualified teachers in general schools, who have the required diploma, are compelled to teach specialized theory courses. If they are not capable, they have to teach practical courses. Those who have no required diplomas are trying hard to get the required diplomas, even diplomas unrelated to their teaching. In the employment and promotion of general school and vocational school teachers, on the other hand, no special attention is paid to vocational education, causing vocational teachers to find themselves in an unfavorable position. No doubt the lack of favorable vocational regulations in employment and promotion, to some degree, has had a severe effect on the body of vocational teachers and their social positions. That is why the vocational teacher has not yet been defined as a “profession.”

We should say, at present, that the Chinese government has recognized the phenomenon and is taking measures to solve it by issuing laws, regulations and favorable documents to increase vocational teachers' social positions and working and living conditions. The measures include having priority in selecting houses, favorable pricing in house buying, and social welfare. In more developed areas such measures are being carried out satisfactorily, but in less-developed regions there still remain many difficulties.

2. CHINA'S TVET TEACHERS' QUALIFICATIONS AND THEIR PRESENT CONDITIONS

At present, the Chinese government, considering the differing levels of economic development and different education popularization in different regions, is practicing a three-leveled vocational and training system: elementary, secondary and post-secondary vocational education, regarding the secondary vocational education as the main part. Meanwhile, the government is trying to establish a TVET system that allows vocational school education and vocational training to develop simultaneously and connect with other forms of education to achieve a co-coordinated development.

The term vocational education has the same meaning as the term ‘technical and vocational education’ which is used by UNESCO. Vocational school education in China is provided at the elementary, secondary and post-secondary levels of education. Elementary vocational education schools enroll primary school graduates. Its aims are to produce junior-level skilled workers and farmers. The current junior vocational high schools belong to this category. At present, elementary vocational schools only exist in the undeveloped countryside. Secondary vocational education is the senior high

school level of vocational education. Its aim is to produce middle-level skilled workers with relative all-round competencies. Schooling is for three to four years. Secondary vocational education includes secondary specialized schools, vocational senior high schools and skilled worker schools³. Post-secondary vocational education enrolls graduates from general senior schools and secondary vocational schools. Schooling is generally for two to three years. The current vocational universities and the vocational and technical colleges belong to this category (see figure 3-1).

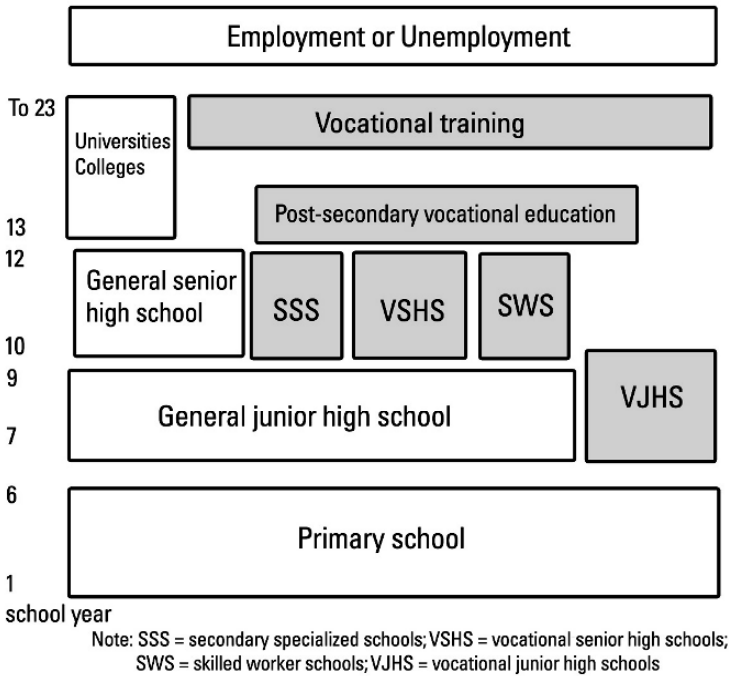


Figure 3-1. The Chinese Educational System

³ The existence of the three kinds of schools is mainly due to historical reasons (the intersecting of the management competence among Education Ministry, Labour Ministry and other ministries and commissions). At present, there is little difference among the training targets and teaching contents of the three kinds of schools. Therefore, a new school name, Secondary Technical Vocational School, is gradually replacing the three former school names.

At present, the full-time teachers in China's public vocational schools are on par with government employees⁴. As provided in Article 3 of The Teachers Law, "teachers are the professionals who undertake the duties of textbook teaching and moral education, training and educating their students to be the builders and successors in socialist causes and enhancing national qualities". Thus, the teachers are defined as teaching professionals. Furthermore, the Teacher Law provides that "the state protects teachers' legal rights, improves their working and living conditions and raises their social position." The TVET teachers, as an important part of the whole teaching body, "are the professionals who are specially educated and trained and are capable of teaching vocational knowledge skills and moral behaviors in order to develop the students' ethics, vocational skills and moral health (Meng, 1994)."

In China, types of teachers differ according to the vocational school's function. In general, there are two main types of teachers in vocational schools, that is, general knowledge course teachers (wen hua ke jiao shi) and specialized course teachers (zhuan ye ke jiao shi). The latter are usually divided into specialized theory course teachers (also called technical theory course teachers) (zhuan ye li lun ke jiao shi) and practice-instructing teachers (sheng chan shi xi jiao shi) (see figure 3-2). In reality, the structures of teachers in vocational school are more complicated than what is described above.

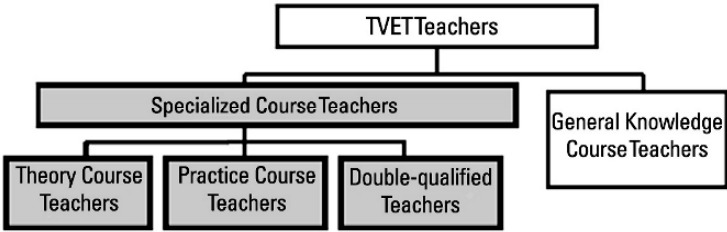


Figure 3-2. The types of TVET Teachers

Article 34 of the "Teacher Law" provides that "the State practices the system of employment under contract according to teachers' qualifications

⁴ There are only a small number of private vocational schools in China, the teachers in which only account for a small proportion of the whole of China's teachers. Those teachers are entitled as enterprise employees.

and their posts and raises their qualities and reinforces the teaching body’s building by examining, encouraging and rewarding, training and upgrading their qualifications.” In Article 10, it is provided that the qualifications of TVET teachers are mainly as follows: Chinese nationality, ethnic requirements, education background and teaching ability. A teacher’s qualification must also be identified by the legal authorities or other government organizations.

The development of China’s vocational schools brings about the need for more teachers in this occupation. In 1999, the number of full-time teachers in China’s vocational school education system reached 1,077,000 (among them, 274,000 teachers in secondary specialized schools (*zhong deng zhuan ye xue xiao*), 336,000 in vocational high schools (*zhi ye zhong xue*), 150,000 in skilled worker schools (*ji gong xue xiao*), and 317,000 in adult education schools (*cheng ren xue xiao*). There was great progress in China’s TVET development in the 1980s, which caused a great increase in the number of TVET teachers. At present, although evidence shows some improvement, there is still a comparative difference between the TVET teachers’ actual qualifications and their required qualifications, which can be reflected in the following table 3-1.

Table 3-1. The proportion of Vocational School Teachers who have four-year or more higher education

Year	Secondary specialized schools	Skilled worker school	Vocational senior high schools
1990	54.8%	31.5%	22.7%
1996	63.7%	38.8%	31.2%
1999	69.9%	---	40.5%

The total number is 100%.
Source: MoE, 2000

In 1999, 69.9% of China’s full-time teachers in secondary specialized schools who received four years or more of higher education, increased 6.2% from 1996, and in the same time 40.5% of vocational senior high school teachers who gained their four-year or more higher education diplomas, increased 9.3%. But there are still a great number of teachers who have not yet gained the state-required diplomas, especially for the specialized course teachers. What is more serious is that most of those specialized course teachers who gained the required diplomas are former general knowledge course teachers who have changed their posts to specialized course teachers. Although they have the required diplomas, the specialized courses they are teaching now are not their original ones. Thus, it is difficult for them to be qualified for the present level of teaching.

It must be pointed out that there are a great number of part-time teachers in vocational schools. Many specialized course teachers, especially those who teach specialized courses or practical courses in vocational senior schools, are experienced technicians from enterprises, especially in short-term specialties.

Employing technicians from enterprises as part-time teachers has become a practice of many vocational schools in which they can co-operate with enterprises. According to statistics in 1999, the number of part-time teachers in China's vocational senior schools, secondary specialized schools and skilled worker schools were respectively 26,000, 11,000, and 27,000. The development of employing part-time teachers in vocational schools not only strengthens the practical characteristics in vocational schools, but also poses a challenge to the TVET teachers' professionalization, which had no way of developing as long as the opinion that TVET teachers should only pay attention to textbook knowledge teaching existed and while there was no necessity to build a full-time teaching body teaching practical courses in vocational schools. In China's TVET field the opinion exists that the vocational schools only need full-time teachers, who teach general knowledge courses, and that the specialized-course teachers can be employed according to temporary requirements.

Table 3-2. The proportion of TVET Teachers who teach different courses in Secondary Vocational Schools and Vocational High Schools

	Secondary specialized school	Vocational senior high school
General knowledge courses	30.7%	47.5%
Basic technical courses	9.0%	--
Specialized courses	58.2%	47.3%
Practice instructing courses	2.1%	2.7%
The total number is 100%.		
Source: MoE, 2000		

At present, the lack of a reasonable structure is the main defect in China's TVET teaching body, which is primarily manifested in the following areas (see table 3-2):

- Professional Structure: at present, there are more than enough general knowledge course teachers, inadequate specialized course teachers and even fewer practice-instructing teachers in China's vocational schools, especially in vocational senior schools. In 1999, the percentage of specialized course teachers in vocational senior schools was 47.6%, 58.2% in secondary specialized schools and the proportions of practice instructing teachers was only 2.7% in vocational senior schools, 2.1% in secondary specialized schools. The shortage of specialized course teachers is becoming more serious in the new specialties, which came

into being with the adjustment of the economic structure and the development of new technology.

- Professional Posts Structure: the unreasonable structure of professional posts in the TVET teaching body reveals a lower proportion of senior and medium professional posts of TVET teachers. According to the statistics for 1994, China's vocational senior schoolteachers who had medium or higher professional titles made up only one-third of all full-time teachers, junior titled or non-titled teachers, two-thirds. If we separate all the general knowledge course teachers and specialized course teachers according to their posts, it is astonishing that the number of specialized course teacher and practice instructing teachers who have medium or higher titles is rare.
- Age Structure: According to statistics in 1997, the percentage of full-time teachers under 35 years old in secondary specialized schools and vocational senior schools was respectively 55.8% and 64.7%. Furthermore most of those new and in-experienced teachers were not graduates from teachers' universities or colleges, and this had a great influence on their teaching duties.
- Structure of TVET Teachers' Abilities: The great shortage of graduates from TVET teachers' colleges causes many graduates from general colleges or universities to work directly as teachers in China's vocational schools. Some vocational schools select their own excellent graduates to act as specialized-course teachers or practice-institution teachers after short-term training or further study. That is the temporary measure when the needed teachers are not available from teachers' colleges or universities. The above sources of the TVET teachers indicate the defects of the TVET teaching body. The former general knowledge course teachers, though experienced in teaching, lack specialized knowledge and practical experience. Thus, they are not able to teach their courses with the benefit of having practice. The specialized course teachers from enterprises and governmental units, though having the occupational ability and vocational experience, lack teaching methods and techniques. Though most of the graduates from vocational schools who act as teachers are devoted to their duties, they have a shortage of specialized knowledge and methodology. Due to a lack of practical ability of practice-instructing teaching and experience, they have to do the work of organizing and cooperation, leaving the practical operation fully to the enterprises. A teacher who is not skilled in production process is not able to instruct practical courses (MoE, 2000).

The phenomena discussed above have affected and restricted the development of China's TVET. It is an urgent and arduous task to build a

TVET teaching body which fits the needs of TVET development in the 21st century (Huang, 2000).

3. THE EDUCATION AND TRAINING OF TVET TEACHERS IN CHINA

China did not establish a sound teachers' education and training system before the first Opium War (1840-1842). During that period, the teacher selection examination was integrated into the imperial examination system, which was intended to choose government officials. In 1897, Sheng Xuanhuai established the Nanyang Public Teachers' Institute (nan yang gong xue shi fan yuan), which is now recognized as the birthplace of formal teacher education in China. The "Constitution of the Imperial School" (zou ding xue tang zhang cheng) issued by the Qing government in 1904, symbolized the first establishment of China's multi-leveled teacher educational system. The constitution provided the two-standard teacher education and training program.

- Junior teachers' school (the present secondary teachers' school), educating primary school teachers
- Senior teachers' schools (the present teachers' colleges or universities), educating teachers for high-schools and secondary teachers' schools).

In the following 40 years, four heated debates on teachers' education system took place in China. The focus was whether the teachers' schools should be set up independently and whether it was necessary for the specially set-up teachers education to remain as it was (Liu, 1993). After the founding of the PRC in 1949, the teacher education system was reformed, following the former Russian model, and a three-tiered teacher education system was established, which is shown in figure 3-3.

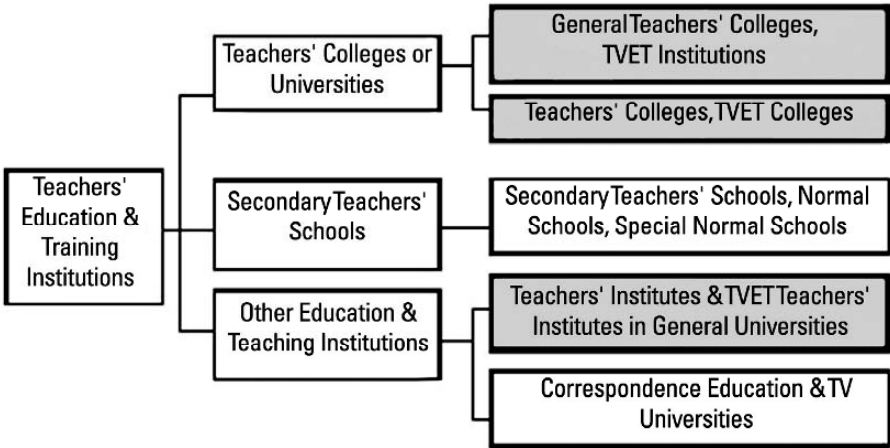


Figure 3-3. Teacher Education System in China
 Source: Teacher –Education Department of MoE

At present, the following institutions are responsible for educating and training teachers:

- Secondary teachers’ schools: aiming at educating and training primary school teachers. The entrance requirements are that the applicants have received at least 9-years of education and have passed the required examination, including a general knowledge test, language test and an interview about the applicant’s personality. The duration varies from three to four years.
- Junior teachers’ colleges: aiming at the educating and training of general school teachers, including secondary vocational school teachers. The entrance requirements are that the applicants have received at least a 12-year education and passed the required examination, including a general knowledge test and an interview about the applicant’s personality. The duration varies from two to three years.
- Higher teachers’ colleges and universities: aiming at the educating and training of the high school teachers, including vocational school teachers.
- Post-graduate education at teachers’ college or universities: aiming at educating and training teaching and researching personnel.

In 1998, China had 236 higher teachers’ colleges or universities including TVET teachers’ colleges, 897 secondary teachers’ schools and about 2000 teachers’ education and training institutions.

Compared with general teacher education, TVET teachers’ education is faced with weak development, which is mainly apparent in the inadequate

number of special TVET teacher education institutions and their educating and training capacities. In 1998, there were less than 30,000 full-time students in all of China's TVET teachers' colleges. The annual number of the graduates, including the ones who did not major in teacher education, could only meet half of the need for new teachers in TVET institutions (Huang, 2000). As described above, not all TVET graduates go to work in vocational schools. This causes vocational schools to seek more sources to meet their need for new teachers. General colleges and universities, in fact, have become a major source for TVET teachers. The following describes ways for the training of TVET teachers in China at present:

- Full-time school education is conducted at higher education colleges, with the target of educating specialized theory course teachers. Specially set up TVET teachers colleges play the role as TVET teachers educating institutions as well as of those for academic research. Also, TVET teachers' colleges (departments) or TVET teachers' specialties are set up at comprehensive universities or technical colleges.
- Further education and training is required for the training of experienced teachers from the field. Such training provides off-the-job and on-the-job training for practical instruction teachers, or double-qualified teachers who are experts both in theory and skill.

According to incomplete statistics in China's 18 provinces and 8 ministries, there are, in China at present, about 300 education or training institutions engaged in or taking part in the education and training of TVET teachers. Of the 300 institutions, there are 200 higher education and training TVET specialized course teachers and 90 secondary education and training institutions for the training of practical instruction teachers (Wang, 2000). There are 10 established vocational technical education teachers' colleges and 17 vocational education teachers' colleges attached to general universities. As demanded in China's Action Plan for Vitalizing Education in the 21st century (21 shi ji jiao yu zhen xing xing dong ji hua), China's Ministry of Education (MoE) has established 50 key bases for TVET teachers' education.

Because of the fact that there is no TVET teachers' specialty in the category of higher education specialties, issued by the China's MoE, China's vocational and technical education teachers' colleges have set up the relevant specialties according to their own understanding of the TVET and their teaching capabilities. The following are the specialties that China's vocational and technical education teachers' colleges set up according to the statistics of China's MoE in 1999:

Computer science and technique, electric automation, electronic information, engineering and science, agriculture, mechanical design and

atomization, food science & engineering, animal science, zoological science, artistic designing, civil engineering, gardening, animal medical science, accounting, financial control, touring management, industrial and commercial administration, agriculture and forestry, economy administration, agricultural mechanization and atomization, biological engineering, chemical engineering and technology, dress-designing & engineering, cooking, secretary, automobile maintenance & repairing (MoE, 1999).

In general, the above specialties are necessary for China's present situation, but there is a lack of systematic and scientific arrangements in these specialties, which is apparent in the following aspects:

- The specialties set up in China's vocational teacher colleges fail to cover all the specialties or fields required in TVET;
- Most such specialties are derived from the corresponding disciplines of general higher education institutions;
- Some specialties, in which more practical skills are required, neglect academic research and study, such as cooking (Zhao, 2000).
- The courses in vocational teaching and technical education teachers' colleges mainly include general scientific courses, specialized courses and education psychology, and are arranged according to the corresponding courses in engineering education. The other section in China's TVET teachers' education is production and practice. The total duration in China's four-year higher education is about 2,600 hours, approximately 25 hours per week.

The table 3-3 shows the curriculum of the mechanical manufacture engineering specialty, which was recommended by China's MoE in 1994. From this, it is easy to find that almost half of the courses (general courses and basic courses) are "zweckfrei" (pointless) (Rauner, 1996). The curriculum indicates that the makers do not intend to connect it with the requirements of the occupational situation and labor world. The development of intelligence and conveying of textbook knowledge were the makers' guiding ideology in their decision on the course-structure and teaching contents.

- There is no clear connection between the specialized courses and the requirements of the labor world;
- There is too much emphasis on the systemization and completeness of specialized courses, thus, there is much unnecessary repetition,
- It is difficult for students to have a complete understanding of this specialty.

The investigation shows that the majority of TVET teachers are playing a role as "semi-engineer". But, the request that the education and training of

TVET teachers should be closely combined with the work field and process lays bare the great contradictions between ideal and reality. The development of the theory of the combination between working and learning, practice and knowledge, will demand the development of vocationally specialized programs (Gerds, Heidegger and Rauner, 1998).

Table 3-3. The curriculum for Mechanical Engineering Specialty in Teachers' Universities

No	Type of Course	Course Name	Duration
1	General Courses	Politics, ethics & PE	State-regulated
		Foreign Language	290 hrs
		General Knowledge on Computer	100hrs
2	Basic Courses	Advanced Mathematics	160 hrs
		General Physics	120 hrs
		Engineering Mechanics	140 hrs
		Descriptive Geometry & Mechanical Drawing	120 hrs
		Measurement Technique	45 hrs
		Basic Mechanical Layout	120 hrs
		Electrical & Electronic Technology	120 hrs
3	Specialized Courses	Mechanical Engineering Material & Hot-working	100 hrs
		Basic Manufacturing Technique	120 hrs
		Manufacturing Technique	70 hrs
		Hydraulic Transmission & Pneumatics	55 hrs
		Electronic Machine Tool Control	40 hrs
		Numerical Controlling & Programming	45 hrs
		CAD	45 hrs
		Computer Principle & Application	50 hrs
4	Practice & Skill	Technical Economics	50 hrs
			More than one school year
5	Pedagogical courses	Vocational Pedagogic	50 hrs
		Vocational Education Psychology	50 hrs
		Teaching Skills	60 hrs
		Methodology	30 hrs
		Teaching Practice	7 weeks
Target: The future teachers of mechanical engineers specialty in secondary vocational schools			
Duration: Four years, Bachelor's degree of engineer			
Source: MoE, 1994			

In recent years, China's TVET teachers' colleges have made great efforts to set up a special system for the education and training of TVET teachers. The establishment of the relevant research institutions and organizations, Higher TVET Teacher Education Commission of Chinese Vocational Education, for example, and the national key base for TVET teachers education and training has brought this work on track, and has laid an

important foundation for the development of “vocationally specialized” programs and the final realization of TVET teachers’ professionalization.

In practice, China’s TVET teachers’ colleges have started reforming their present specialties according to the principles of vocationalization (*zhi ye xing*), application ability and practical ability in order to set up high-quality and competitive specialties, but such a reform is only in its initial stage, as the following describes:

- The reform is limited to the selection, adjusting and recombination of the teaching contents within the corresponding engineering specialties. Many colleges have come to realize the problem, but it has not led to developing a teaching theory which has to do with the work process or the theory of educating and training in this process (Benner, 1977; Rauner, 2000).
- In the reform, in accordance with “applicability”, a proposition has been put forward that a TVET teachers’ qualification should include knowledge of the work process, but in reality, the traditional subject-matter- or discipline-based paradigm is determining in textbook compilation. Specialized course teaching still centers on theoretical knowledge, and knowledge relevant to the real work situation is rare. Too much attention is paid to the abstract ability in the work process, and hardly any to the organization and technique of the work process. Thus, there is little feasibility in the effective realization of “applicability” of the teaching contents.
- In teaching reform, many colleges, in the name of reinforcing practice, demand that their students obtain occupation qualifications. Practical teaching, in this way, is simplified as the learning of practical skills, but lacks of experience in research, analysis and teaching of the knowledge of work the process. All of these reflect the basic conditions in the traditional TVET system. (Dehnbostel, 2000)

4. CHINA’S TVET TEACHERS’ WORKING ACTIVITIES

In 1998, the Central Institute of Vocational and Technical Education (CIVTE) organized an investigation on TVET teachers’ actual professional activities in secondary vocational education. The investigation focused on the TVET teacher standard and its development, which was one of the research programs at the APEC Education Forum sponsored by CIVTE. The following are the results of the investigation:

- The main professional activities of TVET teachers are planning and performing teaching, over 70% of the teachers undertake demonstrating and instructing operations (Liu, Liu and Zhao, 2000). It can be concluded that, due to the percentage of China's practice instructing TVET teachers being far below 70%, almost all the TVET teachers take part in the practical teaching activities and there is no definite dividing line between specialized course theory teachers and practical instruction teachers.
- More and more TVET teachers have undertaken duties not regulated in their professions. For example, 46.8% of teachers take part in labor market investigation within one year and more than half take some part in some of the duty of analysis. That shows that labor market investigation and analysis has become one of their main duties⁵.
- The investigation of TVET teachers' engagement in school management shows that nearly half of them have rarely or hardly taken part in teaching management. This has something to do with the greater number of the school management personnel. According to the Chinese government's demand, the number will be decreased gradually and more teachers will be engaged in school management with the condition that they complete their routine teaching. Teachers' functions thus transfer from mere teaching to management, development and inquiry.
- Ethical, political and social education and instruction are some of the main tasks for vocational education teachers. Because of the fact that the teachers do not acquaint themselves with the occupation and labor market, they seldom take part in occupation instruction and inquiry.
- The number of the teachers who help gather employment and further education information for their students within a month is only 28.1%, while the number of the teachers who undertake the ethical, political and social education and instruction reaches 80%. Fewer teachers are able to analyze the information and instruct the teaching.
- In public relations, the teachers pay more attention to the relationship with colleagues and students' parents than to the public activities with enterprises or communities. Less than half of them take part in activities of promoting cooperation between their schools and enterprises, communities and social organizations. Also, the opportunities of joining in on investigations and seminars are rarely offered to them. Nearly

⁵ Though a centralized state, China allows its schools to enjoy great right to make their own decisions on teaching. The teaching plans and programs made by the State Education Ministry or local provincial commissions are generally instructive documents. The school can arrange its own subjects according to the demand of labour market and develop its own specialized courses on a level that is no lower than the basic teaching requirements of the state and local governments.

44.3% of the teachers do not have the opportunity to do the investigation or to go out for further training. Therefore, the short-comings of the teacher training system are major limitations to the development of vocational education.

Table 3-4. DACUM-chart on China's TVET Teachers

Duties	TASKS
1 Development of Curricula	1.1 Analysis of Labour market 1.2 Job Analysis 1.3 Analysis of teaching contents 1.4 Compiling of textbooks 1.5 Course experiment 1.6 Evaluation of courses
2 Tasks Designing	2.1 Knowing the students' need for knowledge 2.2 Study teaching contents 2.3 Planning the target of the unit course 2.4 Planning the carrying-out of the teaching plan 2.5 The selection and making of the teaching media methods 2.6 Designing and selecting of the teaching spots
3 Teaching performing	3.1 Classroom teaching 3.2 Practical teaching 3.3 Organizing simultaneous teaching 3.4 Practice teaching
4 Management	4.1 Taking part in school 4.2 School's document management 4.3 Teachers management 4.4 Students management 4.5 Management of HR & facilities 4.6 Management of practice-bases
5 Instructing students	5.1 Promoting students values 5.2 Job consulting
6 Teaching evaluation	6.1 Evaluation of students level 6.2 Evaluation of student skills 6.3 Self-evaluation
7 Public relations	7.1 Planning of public relations activities 7.2 Compiling media materials 7.3 Media 7.4 Displaying teaching achievements to public 7.5 Promoting cooperation among relevant departments and persons
8 Professional development	8.1 Increasing one's own level in knowledge and skill 8.2 Instructing other teachers' activities

Table 3-4 shows the DACUM-chart on China's TVET teachers, as found during the investigation. Based on the DACUM-chart, the definition of the TVET teachers' profession is clear. A TVET teacher should be qualified in the following aspects:

- Solid basic theory and specialized knowledge in his specialty, especially knowledge that has a direct connection with occupational practice: capability to correctly analyze and evaluate occupational activities and work processes: ability to undertake new curriculum development.
- Practical occupational ability in his specialty and having the practical occupational experience.
- Essential theory in vocational education and should be able to analyze, evaluate, design and perform the teaching-learning process.
- Capability to engage in school management and public relations.
- Ability to educate and instruct the students in all the requirements and instruct them in their occupation choice and development.
- Capability to develop a career.

But in practice, it is still difficult to realize the above definition due to the premature conditions in policies and practice.

5. SUMMARY AND PROSPECTS

In review of the last ten years of development in China's TVET teaching body, we can draw an optimistic conclusion that the TVET teaching body is playing a more and more important role in China's TVET program and more attention is paid to its influence on China's entire educational development. China's MoE issued a document in 2000, which emphasized that to build a high-quality teaching body is to guarantee the development of vocational teaching education and speed-up the process of quality education. Furthermore, the practice of the "Teacher Law" and "The Regulations of Teachers' Duties" provide the better legal and social environment for TVET teachers' professionalization.

On the other hand, the process of TVET teacher professionalization is restricted by various factors. The different functions of these factors may promote or restrict the final realization of professionalization. The present direction of the building of the TVET teaching body demands the combination of full-time and part-time TVET teachers to form a reasonable structure in the teaching body for the complete promotion of the quality education," (MoE, 2000). It requires that TVET schools employ a certain proportional number of part-time teachers, which is a challenge to the TVET teacher professionalization. Problems still remain unsolved with respect to the practicability and the reality of building the double-qualified teaching body. Furthermore, the limited teaching and academic level of the TVET teacher education institutions has become an obstacle to the development of specialties, such as the training program, curriculum system and teaching

contents. All these are restrictive factors in the development of China's TVET teachers' professionalization.

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Chapter 4

THE PROFESSIONAL SITUATION AND TRAINING OF VOCATIONAL TEACHERS IN DENMARK

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1. INTRODUCTION

The organization of vocational education and training within different educational systems varies considerably from country to country. There are differences in the length of compulsory education, in the points at which young people have to choose between various options in the education sector, the options available, the length of the course of studies chosen (or the course of studies chosen for them) and so on. The conditions of vocational teachers and course trainers reflect these differences of approach in Europe.

To understand the Danish VET TT system, it is necessary to give a short presentation of the national VET system. Following this will be a presentation of the VET teacher model and the qualifying structures and practices seen from historical, structural and comparative perspectives. This essay discusses, in conclusion, four critical issues related to the Danish model:

- VET teacher qualifications and relevance to working life
- Lifelong learning perspectives
- Career development and professionalization strategies
- Intrinsic links between science, technology and practice.

2. THE DANISH POST-16 EDUCATION SYSTEM – HOW TO UNDERSTAND THE “SYSTEM LOGIC”?

A major challenge in comparing different education systems is trying to find patterns of structural and functional similarities and differences, allowing a kind of grouping of systems into “families”. How, then, can one understand the Danish youth education system?

2.1 The education system

In Denmark, education is compulsory between the ages of seven and sixteen. Optional pre-school education is provided from the age of six. There is also an optional year, called the 10th form, undertaken by almost 60% of all youths, mainly by those young people who are undecided about their career or course of study, or who wish to improve their general education. 99% of all youths complete compulsory education in 9 or 10 years. At the moment, 95% of those completing compulsory education continue their studies in the various youth (“post-16”) education programs. Only a few VET programs do not have free access. There are three main categories of post-compulsory education and training:

- vocational education and training programs, attended by approximately 35% of school-graduates;
- vocational upper secondary education, attended by approximately 15% of school-graduates;
- general upper secondary education, attended by approximately 45% of school-graduates.

The Danish VET programs are part of the overall upper secondary education system (see figure 4-1). The aim of the programs is, therefore, not only to provide the trainees with vocational qualifications, which are formally recognized and in demand in the labor market, but also with general and personal qualifications that open possibilities for lifelong learning and active citizenship.

Denmark has approximately 140 vocational colleges, which can be classified in four groups according to sector:

- technical colleges (craft, industrial and technical service occupations);
- business colleges (commerce and administration);
- agricultural colleges (agriculture);
- social and health care colleges (public, social and health care).

THE DANISH EDUCATIONAL SYSTEM

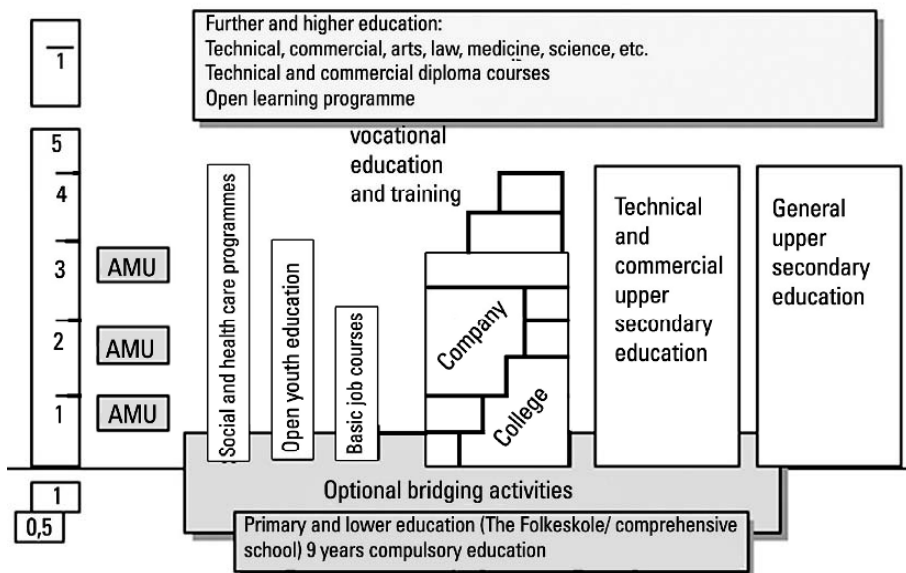


Figure 4-1. The Danish Education System

VET colleges in Denmark offer not only vocational education and training, but also technical and commercial upper secondary education, short-cycle higher education courses and further education for skilled workers.

2.2 Understanding the systemic logic

From a Danish perspective, it is sometimes difficult to see the logic of the system. One way to get a deeper understanding of the “system” is to analyze it by way of a structural-genetic approach, where the point of departure is a careful observation of existing structures which are then followed backwards in time to the historical, political, social and cultural situation, where they were born. The Danish “Post-16” education system can then be characterized as still showing the marks of three main traditions:

1. the Latin school, in the form of a modern three-year optional upper secondary school (gymnasium, in Denmark in four different forms: the general gymnasium, the technical gymnasium, the commercial gymnasium and the HF);

2. the apprenticeship system based on the old principles of master-apprentice learning, in the form of a vocational training system based on the principles of the dual system, contracts and strong social partner influence;
3. the plethora of “free schools” which also offer vocationally oriented instruction.

It is a striking fact that Denmark differs from the other Nordic countries in terms of the position of the VET programs in the overall configuration of youth education. While the other Nordic countries, to quite a high degree, have instituted 12-year schooling for everyone (*the “videregående skole”* in Norway, *“gymnasieskolan”* in Sweden, *“combination studies”* in Finland), all with increasing individualization and flexibility within existing, familiar educational structures, it is notable that the differentiation of education has increasingly been systematized in Denmark. As a result of legislative initiatives to increase flexibility in the nineties (*“Bridge building”, “Education for All”* etc.), students can choose between a number of different forms of schools and traditions which, today, they can combine in a multitude of ways and they can quite substantially vary the training time.

Thus, there is a cultural tradition in Denmark of great diversity in the system of education and training, based on a Grundtvigian free-school tradition, which means that the market mechanism regulates the allocation of public resources, depending on how the young people “vote with their feet.”

To sum up: the Danish vocational education (VET) system can be described as a cultural bridge between the European (German) dual apprenticeship systems and the school-based models of the Nordic countries. The system is a further development of the apprenticeship principle and there is more theoretical teaching (more time spent in school) in the Danish VET system than in German VET programs and conversely far more practical in-company training than i.e. in the Swedish system (15% of teaching time compared to between 60-75% in Denmark).

2.3 VET Reform 2000

In 2001, a major reform (Reform 2000) came into force, which implied far-reaching changes in both the structure of VET programs and in the pedagogical approaches. The student and his/ her learning are at the center of the reform and the VET system has become more competence-based, defining the objectives for vocational competences as well as general, personal and technological competences. The reform has changed the structure, contents and learning environment in vocational education and training. Its keywords are transparency, flexibility, widening and broadening, and social inclusion. The two main principles are a simpler

structure and much greater flexibility within the programs. The reform launches the following new elements:

- Fewer and broader admission channels into VET courses (from 83 to 7 basic courses);
- Modular curriculum;
- Optional “double qualification” as well as “partial qualification” in the structure;
- Interdisciplinary learning;
- Tutor support to students offering individual pathways to learning;
- Personal education plan for students;
- Students have “log-books” and individual study portfolios;
- Teacher team organization in schools;
- Development and innovation of school learning environments.

A paradigmatic shift is currently taking place in the Danish VET system: from qualifications to competences and from teaching to learning. The Danish VET system is qualification (curriculum) -based but the development of personal competences as a pedagogically innovative challenge within the structure is a high priority. Learners increasingly take responsibility for their own learning and, with the “Reform 2000“ their initiative, individuality and flexibility were further enhanced. A changed balance between the system and the individual has been created. This has necessitated the introduction of support functions and tools: the contact teacher’ scheme, the ‘personal education plan’ and the ‘education (“log”) book’. These functions and tools all serve to facilitate the student’s learning paths through a VET program.

Reform 2000 introduced new working forms among the teachers and among the colleges. The teachers need to work in teams and co-operate in planning and implementing teaching methods. The teacher teams play a very active role in planning today, not only in teaching methods, but also in local education plans.

3. THE VET TEACHER TRAINING MODEL IN DENMARK

The overall organization of the VET teacher qualifying process in Denmark can be summarized as a short obligatory, initial training of teachers combined with a lifelong learning process under the supervision of the VET colleges. The model is illustrated in the figure 4-2.

The VET Teacher Qualifying Process

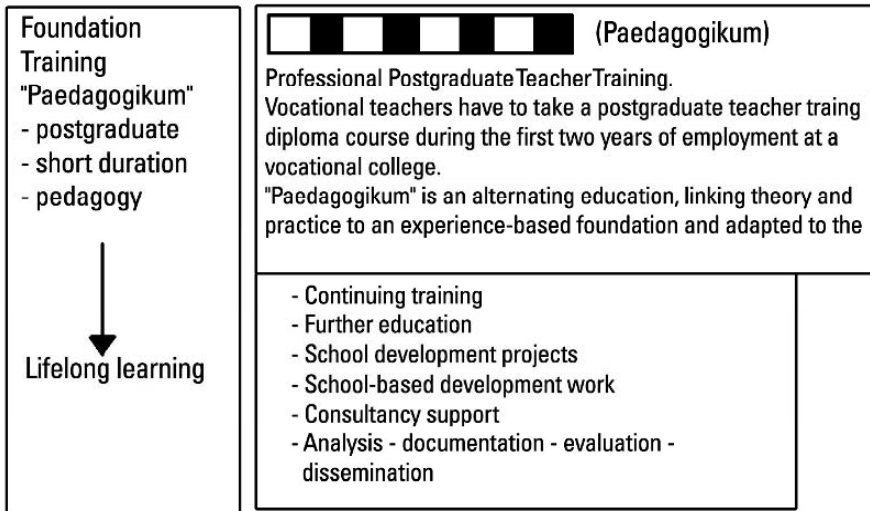


Figure 4-2. Teacher Training in Denmark

3.1 Access to the initial VET teacher training program

Until 1960, the majority of teachers were employed on a part-time basis and had to meet only a few requirements concerning qualifications. At that time, no independent institution was responsible for providing training for vocational teachers. In 1969, DEL - the Danish Institute for the Training of Vocational Teachers - was set up as a specific provider of training for teachers in commercial and technical colleges.

In the 1970s, the "Paedagogikum" and DEL's continuing teacher training programs became an important part of efforts to develop and co-ordinate the teaching of general and vocational subjects in the EFG⁶ structure.

The inflow of general subject teachers led to a regulation passed in 1974 and which is still in force, laying down qualification requirements for VET college teachers. Requirements applicable to all teachers:

- minimum of two years of relevant labor market experience;

⁶ EFG – Erhvervsfaglig Grunduddannelse: Initial VET course.

- minimum general education background comparable to academic upper secondary level in social science, plus a minimum of two of the following subjects: Danish; mathematics or science; foreign languages;
- general education in pedagogy common to teachers of general and vocational subjects. Requirements applicable to qualifications in the teacher's main area of teaching:
- teachers of vocational subjects: a relevant apprenticeship training, plus occupation-relevant further education, plus a minimum of five years of labor market experience;
- teachers of general subjects: education in the subjects concerned to the level required for teaching in primary education, secondary education or university education;
- both categories of teacher: training in occupation-related pedagogy and didactics.

It should be stressed that there is no formal education leading to the qualification as a vocational teacher in the general education system (i.e. unlike the case for teaching in elementary or academic secondary education). Applicants who meet the above-mentioned requirements start with a job as a teacher in a VET college, but then have to undergo the “*Pædagogikum*” training (the college is obliged to organize this) - which is a sandwich course combining theoretical courses at DEL and teaching practice (including project and development work) at the VET college under the guidance of a supervisor (who has been trained at DEL specifically for this duty).

3.2 Initial training program for teachers

Basic vocational teacher training in Denmark is a *consecutive* course in pedagogy, which supplements the technical skills and practical work experience of skilled workers and others wishing to become teachers. The teaching qualification is obtained through teacher training undergone after the teacher has begun teaching in a vocational college. Applicant teachers are hired by colleges on the basis of their professional qualifications and must begin the teacher-training program within two years of their appointment.

This situation differs from that in most countries, where usually one can study technical subjects and pedagogy to qualify as a vocational teacher after, say, four years. It is regarded as a non-discussed value in the Danish VET system that teachers in vocational colleges have a genuine understanding and hands-on experience of production processes in industry and that the college-based component of VET (1/3 of the program) can be effectively integrated with the on-the-job component of the training.

Vocational teacher training takes place at DEL, which is organized as an autonomous institution connected to all VET colleges in Denmark and has three regional departments so that teacher training is always delivered close to the colleges. DEL carries out not only basic teacher training, but also consultancy work, applied research and development work, etc.

The basic teacher training for teachers at vocational colleges was radically reformed in 1997 in order to meet future skill demands. The basic idea was to create more continuity in the teacher training process as a whole and to ensure closer co-operation between the delivery institution and the teacher candidates participating in the training. In general, the “*Pædagogikum*” for vocational college teachers has been expanded. In 2002 added flexibility, modularization and more self-study were introduced to accommodate college and participant needs. The aim of the “*Pædagogikum*” is to empower the participant through the program to:

- acquire a basis for working as a teacher at a vocational college or in adult labor market training (AMU),
- develop professionally and personally,
- acquire the necessary prerequisites for further pedagogical education and training.

The “*Pædagogikum*” is equivalent to 30 ECTS credits and is a 666-hour program, split up into four sections: 240 hours of theoretical instruction; 266 hours of individual study, with guidance and preparation of the final project; 148 hours of practical training at the vocational college; and 12 hours for evaluation, experience sharing and the examination in theory.

The theoretical part consists of two elements: organized study weeks and independent study (individually or in study groups) with guidance. In the independent study part, the participant is responsible, to a very great extent, for the choice of content as well as the planning and organization of the course of learning, which must ensure that both theoretical and practical elements are employed. In this way, the model provides both the space and the possibility for supporting the development of individual teaching skills.

The program is built upon integrated building blocks of carefully selected themes. By having common learning targets for the individual themes, it is ensured that the contents of the theoretical and the practical parts of the program are in harmony with each other. Vocational pedagogy and its concepts and methodologies are used to understand and reflect on what happens in practice and to guide practice. Through the work with authentic teaching activities and teacher tasks during the practical part, the participant also gets the opportunity for theoretically grounded reflection, i.e. of dealing theoretically with his or her practical experiences.

The participant must have acquired skills in:

- Choosing contents, methods and selecting adequate teaching, work and learning organization forms on the basis of the targets and other frameworks set for the programs,
- Analyzing and assessing the qualifications of youths as well as adult participants,
- Planning, organizing, carrying out and evaluating teaching as well as assessing the learning outcomes of teaching,
- Organizing learning situations and longer courses of education, as well as assessing the relation between teaching and learning,
- Taking part in the planning and performance of teaching tasks and
- Taking part in the organization of pedagogical innovation and development work

The structure of education is organized in 4 modules: a foundation module and 3 specialization modules:

The foundation module focuses on the immediate conditions of teaching: the students, the teacher, the contents, the immediate interaction framework and development work and reforms. The pedagogical and psychological relations, to be empirically observed in the teaching or learning 'room', constitute the point of departure and are perceived and processed in relation to the teacher's work tasks.

The first specialization module widens the perspective so that participants' backgrounds and expectations are studied in more detail. The content is chosen in relation to the targets and frameworks that have been established in curricula and ministerial orders and the teacher is seen as part of a community of practitioners at a college. The aim is to place daily teaching in a greater vocational-pedagogical and educational context.

The second specialization module concentrates on qualifications and competences and clarifies the relationship between the participant's own teaching, curricula and the role of innovation and development work at the colleges as a response to the demands to continuously adapt content and methods to emerging qualification needs in companies and society.

The third specialization module focuses on educational planning, curriculum theory and subject didactics in VET at different levels.

Although the foci in the individual modules differ, the content of the themes of the different modules through the selection of subject matter, always upgrades the connection between the college's internal work, the external planning conditions and the industrial and societal development. In theory as well as in practice, it is required that the participants are actively involved in detailed planning, organization of content, as well as choice of working methods. DEL has the overall responsibility for the implementation

of the theoretical part (common and independent studies), while the colleges are responsible for the practical part. Teacher training leads to a final examination comprised of two parts:

1. an oral examination based on the final project work;
2. a practical test where the candidate plans and implements a teaching sequence and subsequently analyses and evaluates the sequence.

Certificates are awarded by DEL upon completion of the full program.

3.3 The Danish VET teacher training model in international perspective

Teachers in vocational education and training in Denmark have a fairly short-term formal education compared with their colleagues in most other European countries, as is illustrated in table 4-1. Initial vocational teacher training in Denmark is organized in a consecutive model and is primarily a course in pedagogy and general didactics, which supplements the technical skills and practical work experience of those who wish to become teachers in VET schools. Danish VET teacher training models are compared here to Norway and Germany. Norway is interesting because it has recently changed from a “*Pædagogikum*” model to a 3-year full-time program.

Table 4-1. Initial VET Teacher Training in Denmark, Norway and Germany

	WHERE Institutions	WHEN Pre-/ In- service	WHOM Access	HOW Structure	HOW LONG Duration	WHAT Curriculum
D	University (many)	Pre- service (young)	Abitur Work experience	University Practice (“Referendariat”)	5 yrs 1 yr	VET subject General subject Pedagogy
DK	Semi- academic institution (one)	In- service (mature)	Skilled worker 5 yrs of work experience	Sandwich course With Mentoring in schools	14 weeks (660 hours)	Pedagogy Psychology Didactics
N	Semi- academic institution (10)	Pre- service young)	Abitur Skilled worker	Study With School practice	3 yrs	VET subject General subjects Pedagogy

4. LIFELONG LEARNING FOR VOCATIONAL TEACHERS

4.1 Continuing and in-service training for vocational teachers

The continuing and in-service training available for vocational college teachers covers a multitude of courses in general pedagogy and psychology as well as courses in subject-specific teaching theory and methodology.

There are no formal requirements concerning the amount or level of CVT in Denmark, though two weeks were prescribed in 1959. Until 1991, DEL offered its CVT provision free of charge. Formerly, the trade unions of VET teachers were actively involved in continuing teacher training. Union groups from different occupations and teaching subjects co-operated with their respective consultants from the VET Department at the Ministry of Education in setting up joint committees with DEL staff in order to formulate what would subsequently be the priorities for continuing training within their respective fields, often with preference given to subject-specific rather than pedagogic/ didactic training. The criticism voiced against this model was that it supported the purely professional interests of the teachers rather than the needs of the colleges, which wanted to employ CVT as a means of improving the quality of their VET programs.

The 1989, VET reform changed the organization of CVT for teachers. Most of the state grants previously awarded to DEL for CVT were reallocated, on the basis of a “taximeter rate”, to the VET colleges, which were then free to use the non-earmarked funding at their discretion. This radical change channeled the state-funded budget to the users (VET colleges) with a view towards making teacher qualification development demand-based. VET colleges can now buy services from whomever they wish, choosing from a large number of course providers operating in a competitive market. DEL still plays a role in providing some career advancement courses for vocational teachers, but today the market is open for private companies, professional organizations, institutes of technology, etc. The colleges themselves have become active in organizing their own teacher CVT, often combining this with internal organizational development projects and engaging DEL to monitor such projects.

As a consequence of the new allocation principles, a structural reorganization has taken place, with emphasis being clearly shifted away from traditional courses in favor of school-based development work, assisted by consultancy support. The colleges themselves formulate their training

requirements and procure services on the open market. Teacher competence has been strengthened by this shift and continuing training today is largely demand-driven. Analysis of a college's specific needs has become the focus of attention as new methods, such as action learning, have been increasingly introduced. At the same time, value-for-money considerations play an important role in the procurement decisions made by colleges. Most continuing training activities are now run on a college-paid basis.

Many vocational colleges today are on the verge of developing into learning organizations operating within an inspiring learning environment. They have made this transition by launching development projects, action-learning programs, study visits to other countries, etc. Although traditional courses, seminars and conferences will continue to play a role in the skill development process in the future, these elements of the skill development repertoire are clearly of diminishing importance. Continuing training of teachers is now seen as an integral part of a wider strategy for simultaneously developing the professional expertise of individual teachers and the profile of the vocational institution as a whole. Teacher development is part of an overall competence-building strategy in many colleges and learning is perceived as the result of many activities rather than merely as an outcome of participating in formal education events. As vocational colleges increasingly take on responsibility for competence development by formulating their own human resource development policies, organizing their own in-service training and participating in development projects at various levels, they are positioning themselves for more quickly passing on technical and professional skills to the benefit of local and regional industry.

A weak point in the decentralization of the Danish VET TT CVT policy is the fate of occupation-specific didactics. Promoting this would call for the involvement of teachers from different colleges who teach the same vocational subject, i.e. co-operation within the carpentry trade in order to develop teaching materials, etc. Since the early 1990s, this type of CVT appears to have disappeared, as it allegedly does not reflect a market demand from the colleges. Although teacher unions are still expressing an interest in such CVT for their members, college management tends to give only low priority to these wishes. Purely occupation-specific CVT (technology update training) has likewise disappeared from DEL's CVT program. DEL used to identify and hire external expertise on a short-term basis to provide instruction on courses of this type. What has actually disappeared is an organizational channel for articulating and aggregating the need and demand for occupation-specific CVT among vocational teachers employed in colleges across the country. If teachers of, for example, electronics, at a certain technical college succeed in convincing their college management that they need training in a new technology, the college itself then has to:

(i) find an appropriate provider and (ii) consider whether the envisaged CVT course should be opened up to other colleges with training needs in electronics (coordination).

It is difficult to estimate the degree to which CVT in occupation-specific pedagogy has declined. It is certain, however, that the devolution of responsibility for the CVT of vocational teachers to the colleges – combined with competition among colleges for higher teaching quality in order to attract students/ customers - has created a much higher awareness of the possibility of using teacher CVT as an integration tool in promoting organizational development and better training standards.

4.2 Innovation and development work

VET college participation in innovation and development projects (FoU projects) has been growing rapidly. Participation in school-based development work is considered a very substantial innovation approach in the Danish VET system and an efficient way to not only develop education, training and schools, but also to develop teacher resources and skills. Educational development, organizational development and teacher competence enhancement, to an increasing extent, go hand in hand.

In 1999, the Danish VET system received the Bertelsmann Prize for its innovative capacity. One of the highlighted features was the Danish system's capacity for continuous adaptation and innovation in the light of technological, socio-cultural and economic changes. An element that underpins this capacity for change is the Danish FoU Program. This program stimulates innovation and development, which has become an integral part of the daily practice of VET colleges. The FoU Program dates back to 1991 when a major reform of the VET system was implemented. A new decentralized governing system, based on management-by-objectives, was introduced. In order to support the colleges in their work of translating central objectives into local practice and local education plans, the Ministry of Education set up a fund for innovation activities. In this way, continuous innovation and development was made an integral part of the VET legislation. FoU activities are funded via the State Budget. In 2001, 54 million was allocated to FoU activities.

Each year the Ministry of Education publishes an FoU Program for all VET programs describing the priority areas and the application procedures. FoU projects can be initiated at all levels and by all stakeholders in the system. Often, the teachers themselves have an idea for improving their own practices and draw up a proposal for an FoU project. FoU projects cover a wide range of activities from local development projects, aimed at developing teaching within a specific subject or trade, to national projects,

covering all colleges and research and evaluation of specific political initiatives and reforms. But basically, FoU is about developing new practices at the VET colleges in order to keep up with the changes in society.

FoU is closely related to the practice of teachers. Most projects take their point of departure in specific problems and are often initiated by one or more teachers with a view to developing their own practice. These principles of teacher involvement and basing the FoU projects on practical problems are central for understanding the VET system's capacity for change. The teachers are not just subjected to changes imposed from above; they are themselves "change agents" and are able to influence their own work. The FoU is also a central mechanism for the continuing training of vocational teachers; it contributes to the professionalization of the teachers and the teachers' capacity to cope with change.

However, continuous enhancement of teacher professionalism cannot be based on educational developmental work alone. Educational skills in the field of vocational training can only be enhanced if teachers are offered further education and training in longer-term, qualifying programs. In order to organize and consider experiences gained at schools and to put them in a developmental perspective, it is crucial to give teachers opportunities to upgrade their skills and qualifications. It is therefore important to focus on further and higher education of suitable teachers in the future, so that these teachers will be able to carry out major planning and development tasks at individual schools or for the benefit of the educational system as a whole. The Diploma Programs offered by DEL i.e. in 'Vocational Teaching' and 'School Development and Processes of Change' are a major step in this direction.

4.3 The conceptualization of VET in Denmark

There is hardly any established or institutionalized research tradition within the field of VET in Denmark, not least because the social partners have had (and still have) the responsibility of defining new qualification needs, constructing new job profiles and formulating the outlines of corresponding vocational courses. In Denmark, this process is performed in a very pragmatic way. The peripheral committees are the link between the identification of new qualification needs and their educational answers - and it is still not very common in Denmark to use more scientific industrial sociological qualification analyses as a basis for vocational educational planning.

In the Nordic countries, the concept of 'VET pedagogy' embraces both a broader VET problematic as well as pedagogic dimensions and teacher training. The concept is thus a very broad concept. Within the Nordic

tradition, pedagogic 'FoU'- work plays a very substantial role in the development of VET. But what is the "nature" of "FoU" activities? They are a hybrid between development activities and research activities. The FoU concept can have two meanings: 1) "research and development" and 2) "innovation and development". This distinction between scientific research, applied research and FoU is important not least when comparing European and Nordic countries. In other EU countries, VET research is constituted of separate research with inner-university institutions, professors, research, doctorate students, etc.

RESEARCH AND DEVELOPMENT FIELD IN DANISH VET

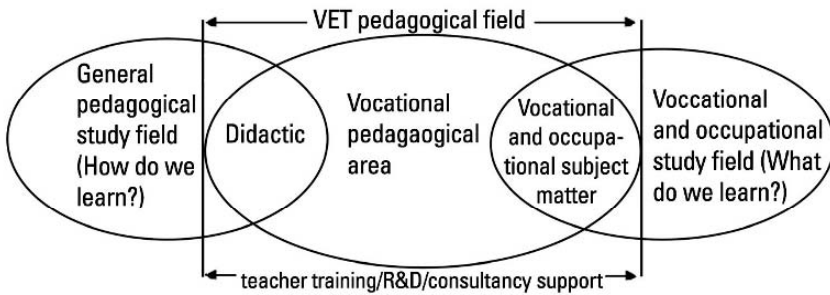


Figure 4-3. Innovation in Danish VET

This is quite unlike the Nordic countries, where the semi-academic VET teacher training institutions have more or less had the field for themselves and where the delineation between research and FoU has not played any significant role. But this understanding distinction is definitely not unproblematic. Generally, there is a demand for genuine VET research in all Nordic countries. Under this tradition, the FoU field is therefore broader than just pedagogic, college-based projects. School-company linkages, qualification analysis, work-based learning, the role of the social partners in VET are thus substantial study fields for the innovative VET development in Denmark. The VET pedagogy/ research/ FoU field in Denmark is illustrated in figure 4-3. This is, at the same time, the conceptual platform upon which vocational teacher training in Denmark is built.

5. CRITICAL ISSUES

5.1 VET teacher training qualifications and working life relevance

Vocational college teachers play a key role in the radical transformations in curriculum design, delivery and assessment in recent years. Reform 2000 has implications for future teacher training and developing the teacher role among those already employed. As part of implementing the VET reform in Denmark, a vast teacher-training program was developed to support the changed focus from teaching to learning. Teachers today are already working in teams and planning, organizing, teaching and evaluating together. But teachers have gained a new role as tutors/ contact teachers and must have an overall view of (dual) training offered to the students and must be capable of guiding students in their progression within individual programs. Thus, teachers also have to become learners in the coming years. Danish VET teachers, however, have a good background for supporting the school-company interplay. A critical factor, which raises awareness of the new requirements and provides an insight into the learner's professional world and their job functions, is the way in which VET teachers are recruited and trained. Teachers must have years of relevant work experience to be employed by the VET colleges and only then do they start their actual pedagogical teacher training at DEL. In this context, it is of paramount importance for the teachers to have extensive job experience to ensure optimum interaction between classroom-based education and on-the-job training in a company. To attract this group of teachers, limitations were set on how long basic teacher training (which is studied while receiving a normal salary as a teacher) may last. A formal 3-4 years TT program would hardly be able to recruit mature, vocationally -skilled and experienced people for the job as a teacher.

5.2 Lifelong learning perspectives

Teachers are, to an increasing extent, required to be able to carry out educational planning and to plan and organize teaching based on specific learning processes. The tasks of teachers are shifting from development to planning because of the modularization of the learning content and the individualization of students' education and training programs. Individualization on the student side implies 'collectivization' on the teachers' side. Teachers must form teams and carry out the planning of programs in consultation with their colleagues. Increased focus on the role of teachers as consultants also calls for upgrading planning skills. The

functional shift from teachers being messengers passing on knowledge and know-how their roles as intermediaries in relation to individual learning processes, in which the teacher functions as a tutor or coach facilitating effective learning processes, has far-reaching implications for the qualification of teachers in VET colleges and adult vocational training centers. However, the educational system and educational theory have only just begun to adapt to the focus on lifelong learning, which will cause a significant shift in the balance between the (VET) system and the individual. It will take time and require efforts to develop an open education and training structure, in which learning takes place in a continuous, multi-year process of education, training and ongoing upgrading of skills.

Consequently, considerable challenges exist in relation to the development of the new role of teachers. Both students and teachers must learn how to learn and though there seems to be general agreement that students must assume responsibility for their own learning, the requirements made of teachers are still relatively vague. It is the teacher's job to provide optimum conditions for students to learn, even though the actual learning is the responsibility of the students. The learning process must focus on the interplay between the role of teachers and the role of students. This is both an obvious and a great challenge for teachers who have been used to having the sole responsibility, or at least the overall responsibility, for the teaching process. In this connection, supervision by colleagues has proved very useful in vocational education in Denmark. Also, the strong tradition of involvement in local, college-generated innovation and development projects has a high learning effect for teachers in a lifelong perspective.

5.3 Teacher career development and professionalization strategies

The formulation of career strategies is a natural responsibility of a trade union as well as negotiating collective agreements and regulating salary levels and working conditions. For years, the job as a VET teacher has been under transformation, the teacher "role" has been radically changed. The trade union response has been defensive: to protect existing bastions as far as possible. But there is an acute need now to develop an offensive professionalization strategy and articulate and shape new ideas corresponding to societal trends and developments. Two major driving forces appear to fundamentally change the setting for VET teacher qualification practices. One driving force is the shift in orientation from teaching to learning and from qualifications to competencies. Developments in learning theory support this change of perspective. It implies that the development of teacher competencies - a psychological term, a feature related to the individual - can best be carried out as closely related to the

practical working situation as possible. Local school-based pedagogical development work is regarded as the best way to develop teacher competencies, normally organized in teams of teachers. While this continuous on-the-job and in-house empowerment of job performance by VET teachers is probably an optimal way to enrich the capability to organize innovative learning processes and environments, it is also a serious problem for teachers in terms of recognition and accreditation of newly acquired competencies. In other words: how can individual competencies be translated back into qualifications - a sociological concept implying societal recognition, i.e. approved by state and social partners in this particular segment of the labor market?

Another fundamental driving force behind (mega)-transformations in society is the changing view of the public sector. Sectors such as health, welfare and education & training are increasingly seen as service sectors in line with the private sector provision of services. To increase responsiveness and client-orientation as well as increase productivity, public institutions have undergone fundamental changes in recent years. This trend has been conceptualized as “New Public Management” and has two major pillars: (1) allocation of public money is best done through market solutions and (2) public institutions should use the same management principles as private companies do. In VET colleges, modern salary systems have been introduced based on different, new appraisal measures. These trends have been strongest in the VET sector.

The teacher trade union response has been defensive. The introduction of modern salary systems was launched precisely at a time when it was difficult to make enhanced teacher competencies visible and transparent. There is a need in Denmark to develop more offensive strategies. The driving force behind change will have to be the trade unions of teachers articulating the career interests of their profession. A coherent, offensive policy and strategy formulation by these organizations can respond to the two portents of change. This has not yet happened in Denmark.

5.4 Linkages between science, technology and VET teacher training

The function of the VET system in society should not only be reactive, but demand-led; there is a need for pro-active responses in the ongoing metabolism between the world of work and the world of education. Danish VET colleges have, in many ways, transcended the threshold between traditional schools and modern competence centers under permanent innovation. However, the foundation for teacher qualifying processes has changed since the 1980s. The pendulum has swung almost totally away from

industry sociology, qualification research and work process knowledge towards general learning theory and didactics. As illustrated in figure 4-3, there is continuously a delicate balance to be defined in VET between the fields of work and education and for more than a decade the field has been totally dominated by preoccupation with developments in general learning theories.

It is a paradox that universities today are being forced to become much more closely linked with the private sector to ensure rapid transmission links between breakthroughs in fundamental research and application of results in new marketable products and services. This is fundamental for achieving a competitive edge in the knowledge economy. There is no doubt that similar links must be (re) established in vocational teacher training. The “what to learn” issue will have to be faced again. VET teacher training cannot be reduced to just teaching and learning methodologies. The ‘content’ question is not answered satisfactorily. There is a need to develop a new foundation for vocational teacher training which should consider at least two approaches:

1. closer linkages between science and technology teachers in order to better understand the motivation for change in the knowledge economy and
2. introduction of work process knowledge based on empirical studies of emerging trends in the organization of work in modern companies.

At the moment, there is no clear ‘motivation for change’ for such modernization of vocational teacher training inside the VET system. The demand will probably have to come from the corporate sector, as was also the case during the transformation of the orientation of Danish universities in 2003.

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Chapter 5

TEACHERS OF TECHNICAL AND VOCATIONAL EDUCATION IN FRANCE

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1. SETTING THE PROBLEM

The system of Technical and Vocational Education and Training (TVET) in France has two main characteristics that distinguish it from most of the other educational systems in Europe and in North America. Firstly, (initial) TVET for young people is clearly distinct from vocational adult education. With very few exceptions, there is no continuity between them and they have only few traits in common. Secondly, the initial vocational education of young people has the particularity of in most cases being located in public (state financed) vocational schools depending on the Ministry of Education.

This means that the great majority of young French people having vocational education after compulsory schooling are neither apprentices nor employees with a training contract, but are still pupils: more than 40% of young French people who have accomplished compulsory schooling are today preparing a technical or professional diploma in full time schools, whilst not more than 10% follow an equivalent vocational training as apprentices in a plant. The second half of young French people is in schools of secondary general education.

As for the teachers and trainers the main consequence of these two characteristics is evidently the strict separation between teachers of initial education and trainers of continuing education. The first group is in the great

majority state officers (civil servants). There are 89,500 teachers working in French secondary vocational schools and in the technological branches of general secondary schools. All of them are, like almost all other French teachers, civil servants. Their recruitment, their teacher training and their careers are organized after the same model used for teachers of secondary general education.

On the other side, trainers of continuing education are in majority employees of private right and not civil servants and their conditions of recruitment and employment are very similar to those of their colleagues in other European countries. For this reason, we will speak in this paper first of all about those teachers who teach in initial TVET.

The first part of the paper will be an historical survey whose purpose is to show, first of all, the institutional and pedagogical foundations upon which the development of a corps of teachers of initial TVET in schools, from the 19th century until the middle of the 20th, developed. The second part will examine the conditions of progressive and conflicting assimilation of this group of teachers into the whole corps of secondary teachers including the consequences of this evolution as for its social constitution and its pedagogical practice. A third part tries to give a description of the actual situation of TVET teachers, their training and recruitment.

Finally, a fourth part will try to conclude by presenting the new challenges given by a practice more and more widespread in France, i.e. alternated training between school and plant, the development of continuing education of adults and the necessity in France to move towards other European training models.

2. THE 19TH CENTURY: TOWARDS THE INSTALLATION OF A VET MODEL IN SERVICE OF MODERN INDUSTRY AND THE STATE

2.1 The beginning of vocational education and training

The beginning of the modern era for vocational education and training in France can be given a very exact date. It is the year 1791, with the proclamation of the freedom of commerce and the abolition of corporations of craftsmen⁷. The system of craftsmen corporations, which had been the

⁷ The so called Decree “Allarde” of March 1791 proclaimed the freedom for everybody to found an commercial enterprise and the bill “Le Chapelier” of June 1791 abolished all

traditional framework for both the regulation of vocational training and the market of qualified manpower since the Middle Ages, was destroyed with the French Revolution. The recruitment and the training of qualified workers were dependent solely on supply and demand. Therefore, since the beginning of the 19th Century, the question of vocational training has often been evoked in connection with term “crisis”. All participants are used to speaking of the “apprenticeship crisis.” These terms cover, in reality, different consequences of the abolition of corporations and the progress of industrialization. Three of these consequences are perhaps the most important ones and should, therefore, be looked at closer. First of all, the result, which was felt immediately by the people involved, was the decline of the traditional apprenticeship in craftsmen workshops. The craftsmen, no longer constrained by the rules of the corporation, forced to reduce manpower costs in order to survive in the new competition of industrial factories, hired less and less apprentices. In cases where apprentices were hired, the training period was too short and the quality therefore poor.

A second result, which has deeply influenced public opinion since the middle of the 19th century, was the exploitation of children in the great plants of textile industry or in mining. This is only an indirect result of the abolition of corporations, however, it is a direct consequence of the absolute liberalism of this time. Those people who denounced this exploitation of children at the same time denounced the lack of apprenticeships available. They thought that apprenticeships should be used as a way to protect children from working families, by postponing the time when children entered the work force and by giving them training that would better prepare them for the tasks they would have to do later in life.

Finally, as a third result of the abolition of corporations, there was a deficit of vocational training especially in the modern sectors of growing industry, in particular in the mechanical industries.

New vocational qualifications appeared in these sectors and obliged those responsible to create the corresponding training. The expression “apprenticeship crisis “ means, therefore, a lack of qualified manpower and the difficulty of organizing new types of training.

Because of this, the history of vocational training until the 1970s was characterized by a great diversity of initiatives trying to cope with one or another aspect of this “ apprenticeship crisis.” However, some essential questions arose recurrently: first, the question of the pedagogy of vocational

corporations and organizations of craftsmen, which regulated the creation of new plants. These two acts mark the liberal phase (influenced by the model of the United States) during the French Revolution.

learning (what are the specific conditions of learning in TVET?) and, as a logical consequence of the first problem, the question of the trainers/teachers: who would be the best to organize this learning?

2.2 Masters, engineers, primary teachers, trainers of different origin

Apart from the traditional apprenticeship in handicraft plants, where training consisted of imitating experienced craftsmen, all the other forms of VET in the 19th century, i.e. the school workshops opened by large plants like Schneider or De Wendel, the evening courses offered by the municipalities or charitable organizations in order to permit both young people and adults to complete their training, or the full time technical schools financed by the municipalities, industrial companies or philanthropists, or even by the State had the same problems. In each case, two essential questions needed to be answered. The first question was the proportion between general and technical instruction. Was it sufficient to teach reading, writing and counting, or was it necessary to go further?

The second question was about technical education itself. What should be the right balance between the theoretical and the practical aspects of technical education and training? The answer to these questions will greatly influence the type of teacher or trainers who need to be trained, recruited, as well as what status to give them.

In the plant-schools for instance, training was often very narrowly focused on the specific needs of the technologies used in these workshops. In consequence, the practical training was often left to the most experienced workers in the plant, who were often the oldest workers.

Thus, this task was given to them often as a last activity before retirement. On the contrary, the lessons in French or in arithmetic were generally given to people coming from outside. Teaching general subjects, in the plant schools as well as numerous evening courses organized by the municipalities, became a remarkable source of supplementary income for primary teachers throughout the 19th century. Lastly, if the training required a more theoretical technical education (drawing, geometry, physics or applied chemistry), the plant engineers were asked.

For the rest, it was also engineers who were often the creators of certain evening courses, like those given benevolently by the Association Philotechnique, founded in 1830 by alumni engineers of the Ecole Polytechnique. The evening courses at the Conservatoire National des Arts et Metiers in Paris were also given by engineers.

It was, however, often difficult to recruit teachers for VET outside of the great plants and outside of Paris. During an international congress about

VET in Paris, in 1900, a report informed for instance, that in many towns “the primary teacher is the only person you can count on”⁸ even for lessons of technical drawing and “lectures” on technical subjects. The report also suggested publishing an industrial course in order to help primary teachers in this task.

The situation in the 19th century resembles the situation dominant today in adult education, where we may observe the same diversity in education and profiles of the trainers, where disparity continues. We must stress moreover, that the distinction between initial and continuing education is not quite relevant in the 19th century. Public primary schooling had not yet been realized and secondary schooling was reserved for a small elite. Most types of vocational training given then were for people who had reached the age required for learning their work, which was usually between 12 and 25 (the age of definitive choice, and in general, the age of marriage). There is a great scale of training possibilities and, therefore, very diversified types of trainers.

In the midst of this diversity, one model for VET education in the full time technical schools run by the municipalities, private firms or the central state began to emerge and later became the basis for future solutions. VET was thus first organized.

2.3 The model of vocational schools: Practical training in schools and the educational hierarchy

The first successful attempt to build vocational schools destined to train highly qualified workers was under Napoleon I with the creation of the famous Arts et Metiers Schools⁹. Whereas the “Arts et Metiers Schools” were created by the central state (DAY, 1991), the full time vocational schools founded during the 19th century were initiatives of the municipalities or of private or charitable foundations. They were schools responding to clearly identifiable local educational needs. These schools got more or less explicitly the support of the industrialists of the region. Therefore, most modern industries were involved with these. Those needing workers trained in the new technologies of the time and able to master basic theoretical knowledge such as precision engineering, chemistry, mechanics, and so on.

⁸ Cf. Congrès international de l'enseignement technique industriel et commercial Paris: Librairie Nony et Cie 1900.

⁹ There were already Schools of Engineers created to educate technical staff for the army.

Schools seeking to qualify trade employees also emerged based on these principles and, in the second half of the century, schools for women were opened. The initiators of these schools were unavoidably confronted with the problems mentioned in the beginning of this chapter. They needed to supply practical training, which was sufficiently reliable in order to train manpower that would be quickly operational after school. However, in consideration of the theoretical requirements of the qualifications for which they had to prepare; they must also offer general instruction and theoretical technical knowledge. Alongside these hurdles, they also had to develop pedagogy for learning in the workshop, which had to be different from the traditional on-the-job training, and to combine this practical training with theoretical, technical and general subjects. They also had to find trainers and teachers to do this job.

In this context, two main tendencies appeared very soon in these schools, although considerable differences distinguished one school from the other. The first tendency is connected with the constraints of full time schooling. The necessity of training pupils all day led to the problem of recruiting and paying for a considerable number of teachers working full-time themselves. This led to the creation of a special corps of teachers.

The juxtaposition of practical, theoretical, technical and general knowledge often caused schools to take on the hierarchies found in the labor system in large plants, where the tasks of execution have, particularly in France, a tendency to be seen as lesser tasks.

The example of the Diderot School, founded by the City of Paris in 1873, has a symbolic character in this sense. Although the teachers of this school were not state officers like teachers in general education schools, but employees of the City of Paris, most of were awarded full time jobs quickly. This did not, however, necessarily mean they could not be fired in case of a deep conflict. However, the substandard status of the teachers in the workshops was immediately apparent: clothed in blue overalls, which the other teachers do not wear, they were not really recognized as teachers in the full sense of the word.

Thus, in a particularly solemn moment, the teachers of theoretical technical subjects were invited to the director's speech for the distribution of excellence awards at the end of the school year, but the teachers coming from the workshops were not¹⁰. The latter were considered to be workmen rather than teachers. These two characteristics of vocational schools and their teachers was to reappear in the state technical schools founded in the

¹⁰ quoted after Legoux, 1972.

end of the 19th century and would stay a dominant feature of technical education in France.

2.4 State technical education and the emergence of a new teacher corps

In 1881, the new heads of government of the 3rd Republic decided to intervene directly with the development of TVET. Simultaneous with the construction of a system of a state governed secularized primary education, the Republicans planned to pursue the effort of schooling young people in popular classes beyond the age of compulsory schooling, which at the time was 12 years of age. The secularized school (*l'école laïque*) was a way for them to root a new republican culture in a country still influenced by monarchist or Bonapartist groups, often supported by the hierarchy of the Catholic Church. They try to reconcile two great problems of their time: the problem of socialization in schools and that of vocational education (cf. Pelpel and Troger, 2001).

Centering the debate on the question of schooling young people, the Republicans met the interests of the employers, who were confronted with the problems of educating young workers. These problems were particularly imminent due to the development of the new technologies of the time, especially in the fields of mechanics and electricity. The qualifications of the workers in these branches were quite new and, above all, they required a minimum of theoretical foundation, in particular in technical (industrial) drawing. Therefore, they justified, at least part time schooling. Although they were not very important in number in comparison to the masses of workers employed at the end of the 19th century in textile industry or in the field of construction, the demands of these industrialists had a great political weight: their products, serving especially for transport and for military equipment, were essential for colonial expansion and for military politics.

For this reason, an act was passed in 1881 describing a legal framework, on the national level, for the development of full time technical schools and was used later as a basis for answering the requirements of the employers of the most modern industries. This explains the fact that the status of the teachers in these schools is related to the system of industrial work organization that began to emerge in these types of factories. The influence of Scientific Work Organization is noticeable from the beginning of the 20th Century. We can see a strongly hierarchical decomposition of the tasks of conception and execution, which made it necessary to create and develop an intermediate type of work force, having the task of mediation between the level of conception and that of production and, therefore, also control of the

production process. This type of work organization was generalized between 1920 and 1930.

In addition, these modern industries also needed a new type of qualified worker adapted to the rapidity and the precision required by the modern machines, but who still retained the skills and the autonomy of the traditional craftsman in order to experience new technical processes which were not yet reliable.

In other words, at the end of the 19th century, a specific demand for a very imprecise figure, the “technician”,¹¹ emerges and grows until the 1970s. This type of worker has to have theoretical knowledge, a minimum of general knowledge and solid practical skills, but the whole is in its proportions never exactly measurable. State organized TVET aimed to meet this demand, when it began to develop in 1881. In modern times, this is still the role of the technological branches of upper secondary education (the “lycée”), which then directly inherited the tradition of technical education.

The status of the teachers of state technical schools, founded by the School Act of 1880, reflects, therefore, the system of the division of labor already apparent in the former school systems and reinforced by the development of division of work in the relevant industrial sectors. In other words, the teachers of theoretical technical education and the teachers of general education were attributed a superior status than that given to the teachers of practical subjects in the workshops.

The first statute of this act points out that the staff of general and scientific subjects is paid by the state and has the right to have a certain number of allowances just like other state officers, whereas the staff of practical instruction continue to be paid by the municipality or the *département*. The first group also has fewer hours to teach than the second. Simultaneously, the creation of this statute determining this teacher category as state officer has fostered the development of an *esprit de corps* displayed by the active participation of the teachers of state vocational schools in lobbying for TVET.

In 1902, the still-in-existence “French Association for the Development of Technical Education” (*Association Française pour le Développement de l’Enseignement Technique - AFDET* was founded). This association progressively receives the support of the employers’ representatives who foster the training of qualified workers in schools. These employers come mainly from the metallurgy branch and partly from the bank sector, public works, and from arts and crafts. English historians saw the influence here of

¹¹ The term is used in the modern sense for reasons of simplicity, but we must be aware that it is an anachronism in the beginning of the 20th century (cf. Legoux, 1972).

a pressure group from the environment of the Ministry of Commerce, who gave them the supervision of the commercial schools (cf. Fox and Weisz, 1980). The association guarantees the relationship between the employers of these branches and the teachers of vocational schools.

From the beginning of the 20th Century, the situation of the teachers of technical education already had the main characteristics they have now: a mentality of a state officer, esprit de corps, but also internal hierarchies resembling the hierarchy in the grand Taylorist factories and placing the teachers of practical instruction (trainers) on the bottom of the scale and the teachers of general or theoretical technical subjects on the top.

This is why the whole history of the teaching corps has been marked by a permanent search for an equal status between teachers of general subjects and those of technical subjects on the one hand, and between teachers of theoretical technical subjects and teachers of practical skills on the other.

It is evident that this search for statutory equality was not without any influence on the development of educational practice.

3. THE 20TH CENTURY: SCHOOL BASED CULTURE AS THE DOMINANT MODEL OF TECHNICAL EDUCATION

With the Education Act of 1881, two categories of state financed technical schools were developed: the “National Vocational Schools” (*Ecoles Nationales Professionnelle (ENP)*) and the “Practical Schools” (*Ecoles Pratiques*). The ENP was placed at a higher level, in particular because it offered the best students the possibility of preparing for the concours to enter the Arts and Metiers Schools. However the two categories essentially had the common objective of qualifying intermediate personnel (management) in industrial factories, especially in the mechanical and electric sectors. For the rest, the two types of schools were merged in 1959 into “lycées techniques” (upper secondary technical schools) becoming “the technological track” in upper secondary education in the actual school system and offering a technological baccalaureate and, after this, a diploma of a “Higher Technician” (*Brevet de Technicien Supérieur (BTS)*).

These vocational schools recruited their teachers from the beginning in a similar way, even if the ENP teachers had a greater prestige than those from the “Practical Schools.”

3.1 The teachers of technical and vocational education: Malthusianism and internal hierarchy

In general, the technical schools based on the 1881 Education Act were very selective. After 50 years of existence, just before the Second World War, there were 200 Practical Schools and only 25 ENP in France, enrolling approximately 70.000 pupils. There were fewer pupils in technical education than in secondary general education, although these schools were very selective themselves. There were consequently few teachers of technical education. Until the 1960s, one could think that they belonged to a technical elite.

However, within the institution, the hierarchy between teachers of technical theory and teachers in the workshops is rather pronounced. The training of teachers of technical theory - these are recruited by a competitive entrance examination (*concours*) – quickly became the subject of a public debate.

In 1891, a section of teacher training for teachers of technical theory was annexed by the School of “*Art et Metiers*” in Châlons sur Marne, which meant that these teachers were situated at a similar competence level as engineers. Three years later a similar section was annexed by the School of Higher Commercial Studies (*Ecole des Hautes Etudes Commerciales (HEC)*) for the training of teachers for commercial technical schools.

In 1912, these sections were merged and became the Normal School for Technical Education (*Ecole Normale de l'Enseignement technique*), which was then transformed in 1932 to the Higher Normal School for Technical Education (*Ecole Normale Supérieure de l'Enseignement Technique (ENSET)*). By this change of name, the elitist character of this institution is clearly stressed. For the rest, the number of posts offered for the entrance competition (for the whole country) stayed very low as shown in table 5-1.

Table 5-1. Number of places offered for entrance competition in the ENSET

Year	Places
1925	62
1936	80
1954	178
1986	257

This mode of recruitment by *concours* (entrance competition) to the teacher training institutions shows very clearly that teachers for technical theory are essentially selected on the basis of theoretical knowledge, both in technology and in the applied sciences. The candidates often come from the technical schools, mostly ENP, a fact that reinforces the feeling of corporate

identity and, as a consequence, the participation in all sorts of activities of lobbying for the corporation.

On the other hand, teachers of practical training were, for a long time, recruited only on the basis of their work experience. They were highly qualified workers with a correspondent worker's diploma (after its creation in 1920 the *Certificat d'Aptitude Professionnelle (CAP)* cf. Brucy, 1998). Teachers of practical education were called by the rest "Associated Technical Teachers" (*Professeurs Techniques Adjoints (PTA)*), which shows very clearly their position as "assistants" of the teachers of technical theory.

Moreover, their teaching obligations are higher than those of their colleagues of the theoretical subjects: their timetables are generally aligned to those of qualified workers in the factories, whereas the timetables of the teachers of theoretical technical education are similar to those of the teachers of secondary general education.

Since 1920, the alignment to the timetable and the status of the teachers of secondary general education has been the constant aim of the staff in technical education. Technical education passed from the control of the Ministry of Commerce to that of the Ministry of Education. The teacher corps placed pressure on the ministry in order to gain the equality of status with their new colleagues of general education. But at the same time, the leaders of technical education and the industrialists feared that too much systematic assimilation to secondary general education would do harm to the vocational efficiency of technical education. They wanted technical education to remain "an enclosure of economy within education," as a high officer in the administration of technical schools put it in the 1930s¹².

After the Second World War, the signs of the assimilation of technical to secondary education became evident. In 1946, the first technical baccalaureate was created, and in 1952 the first competitions for the recruitment of Associate Technical Teachers came into being. From this year on, teachers of technical theory were also classified into two categories like their colleagues in secondary general education: there were "certified" teachers (having a "*Certificat d'Aptitude pour l'Enseignement Technique*") and there are "*Agrégés*" (after having followed teacher education and training in the ENSET and having there prepared a still more ambitious "*concours*" - the "*agrégation*").

For the PTA, the teaching duties would remain higher for a long time, but they would nevertheless be reduced and be brought nearer to those of the teachers of technical theory or of secondary general education. Finally, in 1975 the recruitment of PTA was interrupted: a step to the definitive

¹² H. Luc, in: *L'enseignement technique* Nr. 9, february 1939.

merging of the teacher corps in technical education. Today, there is no distinction in this corps; all teachers are recruited on the basis of the same competition (*concours*) that opens the same statute as the teachers of secondary general education have. The only remaining distinction is the name of the concours: The teachers of secondary general education have to get a “*Certificat d’Aptitude de l’Enseignement Secondaire*” (*CAPES*) ; those of technical education have to prepare a “*Certificat d’Aptitude de l’Enseignement Technique*” (*CAPET*). All these teachers may also prepare for the concours of the Agrégation, an academic title, which opens the way to teaching also in the classes of *Brevet de Technicien Supérieur (BTS)* after the baccalaureate, or to becoming a teacher trainer.

3.2 Birth and development of vocational education: The same hierarchical logic

Since the Second World War, there has been a supplementary track of education in France, parallel to technical education - the track of vocational education. This type of education was developed during the exceptional situation before and during the war. More than 800 full time vocational schools were created to recruit about 45,000 young people, in order to instill in them the Petainist ideology (“Family, Work, Fatherland”), but also in order to give them real vocational training. After the liberation, in the face of the considerable needs of manpower necessary to reconstruct the country in a context of a demographic deficit, these schools were considered useful for rapidly training the working class youth without charging the plants to take over the costs of initial training. They received the status of a state school in 1949 and have been thus maintained, and so vocational education was born.

Schools known today as “*Lycées Professionnels*” prepare diplomas which are seen as inferior to those earned on the track of “*technological education*” (*enseignement technologique*). This term replaced the word “*technique*” in the 1970s). The diplomas that can be obtained here are on the level of a skilled worker, not on that of a technician. As early as 1945, these new schools were placed under the administration of the Ministry of Education, Department of Technical Education. Nevertheless, the teachers who had been urgently recruited during the war or just after had contracts under private law and were employed by the associations, which had created these schools in the beginning, stimulated by the Vichy Government. So it was necessary to define a new statute. The debate was very long and showed clearly the stakes of vocational education and training in the society. In fact, some trade unionists coming from the Communist Party hesitated to make these teaching personnel public officers. They preferred a status of employees with simple working contracts. This mode would have forced

these teachers to maintain their connections with the working class. “Former workers are a great deal apart from the teachers and they must conserve this spirit of class,” as a trade union leader wrote in 1951¹³.

On the other hand, certain high officers in the administration were reluctant in charging the state budget by creating a new corps of public officers.

Finally, the pressure created by the newly created teacher union *Fédération de l'Éducation Nationale (FEN)* in 1948,¹⁴ with its rather anti-communist leaders, ensured that teachers of vocational education could become public officers like other teachers. However, this change of status was made after the internal hierarchical model was already in use in technical education.

In any case, the same status of the other teacher categories in technical education was refused to the new corps of teachers of vocational education and training (VET), justified by the fact that they had an inferior academic grade. They were therefore paid like primary and not like secondary teachers. Moreover, particular “Normal Schools” were created for their training, in which, in most cases, teachers of technical education taught.

Finally, the same internal hierarchy as in the ENP and the Practical schools was reproduced in the schools of professional education. Although they had the same salary, the Assistant Technical Teachers had 40 hours of teaching per week, the teachers of technical theory 28 hours and the teachers of general subjects (formerly primary teachers) had 25 hours per week.

At the end of the 1950s, we find two independent levels of technical education in France: professional education for workers and employees and technical education for technicians. The School Reform of 1959 confirms this situation. The schools of professional education took the name of *Collège d'Enseignement Technique (CET)*. They later became *Lycée d'Enseignement Professionnel* in 1976 and finally *Lycées Professionnels* in 1985. The schools of (secondary) technical education became *Lycées Techniques*. They were integrated into the *Lycées d'Enseignement Général et Technologiques* in 1989 and became the technological tracks of upper secondary education. The main difference between the two types of schools is quite simple: it is the question of a baccalaureate. In secondary technical

¹³ Cf. *Le travailleur de l'enseignement technique*, February 1951. It is the Bulletin of the branch of the Trade Union CGT for vocational education.

¹⁴ In these years a special trade unionism for teachers deviated from the great Workers' Trade Unions and created an independent corporatist unionism. The Communist Party always contested the leadership of the FEN between a Union near to the Socialist Party and another one influenced. This internal quarrel was only resolved by the dissolution of the FEN in 1992.

(today: technological) education, vocational qualification (on the level of a technician) is combined with the preparation of a baccalaureate, which, in France, is the requirement for entering higher education: This track gives a “simultaneous” double qualification (academic and technical qualification with one diploma). In the professional track, there is no double qualification (cf. Hörner, 1992; 1994). The first diploma is only a vocational qualification on a workers level. In the meantime, as we shall see later, the possibility of preparing a baccalaureate (bac professionnel) was created, but only in a distinct course after the first vocational qualification. It is evident that in the two different types of schools there are two different categories of staff, all of them public officers, but unequally paid and submitted to unequal working conditions as well.

At the end of the 1950s, there was also the moment where the pedagogical models of technical and vocational education begin to find their actual design.

3.3 The difficult compromise between school and vocational culture

As already stated above, TVET has a double problem: it must find a good mixture between vocational education and training and general education and at the same time create an equilibrium in vocational education itself between practical training and theoretical technical education.

Generally speaking, we can say that in France, pedagogical choices in TVET have been influenced by the fact that most of the training schemes are now organized in schools and that the trainers are now teachers employed by the state.

On the one hand, opting for a type of VET given in schools very quickly made vocational training subordinate to pedagogical objectives. This pedagogical logic surely has some advantages, as we will see later, but it has some drawbacks too. The most known problem has been criticized in VET itself as “waste exercises,” which means that the learners had to produce technical objects that had no practical use and served only for training purposes. A second problem, which we saw in the internal hierarchies mentioned above, is the tendency to favor general and theoretical education to the disadvantage of vocational training.

In extreme cases, there was a certain kind of alienation of the training from the real world. For instance, an electrician could gain his diploma in the 1960s on the basis of good theoretical knowledge of electricity and a good practice of electrical switchboards, which he had to make function in workshop classes. But he was not obliged to be confronted with the complex situation of a real building site with all its unforeseen situations and the

special demands of customers. In the beginning of the 1980s, the employers often complained about these aberrations.

On the other hand, these disadvantages were still emphasized by the fact that the teachers had become civil servants. The reduction of teaching hours controlled by the trade unions together with the ambition to obtain the same symbolical recognition as the teachers of secondary general education, led to the situation that the curricula of vocational training were more and more adapted to the school system and were less and less linked to the reality of industry and commerce.

Teaching obligations of teachers of vocational education were reduced to 26 hours a week in the 1960s and the pupils' time spent in workshops was reduced proportionally. In the same time, the endeavor of reaching full equality with the secondary teachers resulted in raising the level of the diploma necessary to pass the concours for the recruitment of teachers for TVET.

Therefore, less and less workmen with years of working experience were recruited, while more and more young people having a higher technician diploma but no (or very little) work experience wanted to become VET teachers (cf. Tanguy, 1991b). As with VET in general, the logic of work has been more and more replaced by the logic of technology in teacher recruitment (after Tanguy, 1991a; Hörner, 1994). In the general subjects of TVET, instead of former primary teachers, young people with a university diploma, but having failed the concours of the recruitment for secondary general teachers were taken. This evolution had a double result:

A research project on the topics of the written examination in the French language (mother tongue) for instance, showed that from the end of the 1960s onwards, the chosen texts were more and more oriented towards a severe critique of the workers' working conditions, while before, the examination subjects instead praised the virtues of working moral (Agulhon, 1994).

But another investigation also showed that the teachers of the general subjects of TVET did not have many relations with their colleagues teaching vocational subjects, who were, in their eyes, too different both by their former education and by their social origin. (Ibid.)

In any case, it would be a simplification to retain only the bad side of the process of adapting TVET to a school system and making vocational teachers into civil servants. On the one hand, as we will see in the last part of the paper, TVET has been through a considerable evolution in regards to its practical training. But on the other side, this adaptation to the system of schooling has also had a remarkably positive influence on the initial training. It allows the transmission of pedagogical practice and performance independent from the specific "culture" of the firms. It trains workers who

have experienced all possible configurations of their job, who know the theoretical basis and who are therefore adaptable to diverse vocational situations. Moreover, the pedagogical acquisitions “capitalized” in this way do not depend on the evolution of the firms, as can be the case with apprenticeships. The example of numerous bankruptcies in British industry in the 1980s showed that with the disappearance of a plant the skills transferred by apprenticeship given in the firm disappeared too and they are missed when the economy is growing again.

Finally, we must emphasize that pedagogical practice in TVET had always preserved a certain originality although the school framework has had a great influence on it. We should stress very quickly two main characteristics.

The first one is a certain project pedagogy, which was developed in the 1970s. Students work together in small teams and have to realize a technical project, which has to be as near as possible to the real needs and conditions of an industrial plant – sometimes these projects are realized in partnership with a plant. The assessment of the project is taken into consideration for the attribution of the diploma.

The second example is concerning general subjects in TVET. These subjects used teaching methods different from those of secondary general education from the beginning, namely, methods inspired by the progressive education movement: enquêtes, lectures held by students, group work, documentation, scenic representation, etc. TVET is, therefore, a reservoir of a particular pedagogical practice, which would have been more difficult to realize in a learning situation outside of the schools.

4. TVET TEACHERS TODAY

As the historical survey already showed, there was - and partly still is - a great diversity of teacher categories in technical and vocational education. Only in the 1990s, when a great effort was made to unify the teaching staff as a whole, TVET-teacher categories, too, were unified to a certain extent (for the following cf. also Oerter and Hörner, 1995).

In principle, teachers of TVET now have the same status as other secondary teachers concerning tenure, salary and recruitment. Qualified teachers (with full academic education and a recruitment by competitive examination (“*concours*”) have full tenure and are civil servants with job security. Their promotion rules are based on the principle of seniority rather than of real merit. These rules also apply to teachers of state-funded private institutions, which exist in great number in the field of TVET.

Teacher salaries differ according to categories and age. Young secondary teachers earn 23,000 € at the beginning of their career and 44,000 € at the end. The highest teacher category, the “*professeur agrégé*” teaching also (but not often) in TVET will have his pay rise to 53,000 € and at the same time, have the privilege of the lowest teaching load.

The degree of feminization is lower in TVET than in other sector of education. Whereas in primary education 75% of the teachers are women, and in secondary general education 61%, in TVET, there is only a minority of 45% female teachers (we must consider that a very great sector of TVET deals with “female” jobs in business, bureau and administration etc.)

It is notable that French teachers have no activities besides teaching at school. The supervising of breaks, lunchtime, etc. is done by special supervising staff (teacher training students, assistant teachers, etc.) So, French teachers can mainly concentrate on their pedagogical and didactical tasks.

Since the 1990s, teacher training in France, including TVET teachers, has been restructured. The key of the reform was the creation of IUFM (*Instituts Universitaires de Formation des Maîtres*), which replaced the existing institutions of teacher training. These Institutes were established in each of the 30 education regions (*Académies*) of the country. By this means, for the first time, teacher training for all categories of teachers had the same structure (cf. Marchand 1992).

In order to be admitted to the IUFM, all prospective teachers, including those for primary education, who were up to then trained in non-academic institutions or so-called “Normal Schools” (*écoles normales*), must have a university diploma on the level of a Bachelor’s degree (in the French classification, this is normally the “license,” after three years of studies in university) in a subject useful for the prospective teaching tasks. All groups of teachers will receive two years of training in the IUFM.

After the first year, which is predominantly academic with some elements of educational studies, the teacher students have to pass a competitive examination (*concours*), which is different for each category. Teachers of secondary general education have to pass the CAPES (*Certificat d’Aptitude à l’enseignement secondaire*) whereas teachers for TVET have to pass a concours called CAPET (*Certificat d’Aptitude à l’enseignement technique*) when they want to teach in the secondary technical stream (preparing the *baccalauréat technologique*) (cf. also above).

If they want to teach in the vocational stream (without preparing a baccalaureate), they have to take the “CAPLP 2” (*Concours d’accès au professorat des lycées professionnels du deuxième grade*). They may teach in these *lycées professionnels* not only vocational but also general subjects. If they are “generalists” preparing a CAPLP 2, they have to teach two

subjects, whereas in principle, French secondary teachers, in most other cases, only have to study and teach one subject (except for a few pairs of subjects like history/ geography or physics/ chemistry or biology/ geology which are traditionally considered as single subjects).

Having successfully passed these highly selective competitive examinations, the purpose of which is to admit only as many candidates as there are free posts in the schools, the candidates enter the practical phase of teacher training; the second year in the IUFM. Now, the students have to spend a great deal of time in the classroom. TVET-student-teachers also have to spend several weeks in working life outside of school. In this phase, educational studies, sometimes together with primary and secondary general teacher students, are an important part of the training curriculum.

The assessment of the second year of training has three components. First of all the evaluation of the candidate's teaching practice is made by a team of teachers and inspectors during visits made throughout the year. The additional educational studies, including complementary courses in the subject matter to be taught, are also assessed by continuing assessment (*contrôle continue*) throughout the year. Finally, the student teachers have to write a small dissertation (*mémoire*) about a problem in teaching that they were confronted with during their traineeship.

There is a very low failure rate in the end of the second year of training (scarcely more than 2%). Indeed, the real selection process takes place earlier during the concours. We may conclude by this fact that the main criteria in the selection of secondary teachers - in the field of TVET too - are knowledge in the subjects to be taught and, to a lesser degree, educational performance.

The lists of the successful candidates established by the IUFM have to be accredited by the competent state body. In the case of secondary teachers, including TVET, this is done on the central state level. It is only after this procedure that trained teachers are accepted as teachers with full tenure.

The remaining critical problems in this training and recruitment system are the content of the competitive examination (*concours*), which, in the view of critical observers, has to take more teaching problems into account in order to recruit more "professional" teachers. However, this is not only true for TVET teachers, but concerns the whole teacher training system.

4.1 New challenges for TVET teachers

There are three main problems with which TVET teachers in the 21st century are confronted:

- The decline of performance of the students in TVET classes
- The generalization of alternating education and training (between school and workplace)
- The development of continuing adult education

4.1.1 TVET teachers and “bad learners”

From the beginning, TVET received students of rather common social origin. These pupils were not the best learners of their generation because the highest performing pupils went to secondary general education (the then grammar schools – *lycées*). As a TVET teacher in a training institution put it, TVET “has to succeed where primary education has failed,” (quoted after Pelpel/ Troger 2001).

This problem increased in the 1970s, when “secondary education for all” was the slogan of educational policy. Most of the parents understood it as “secondary general education” and they feared to limit their children to socio-economically substandard jobs by giving them “only” VET.

After the French Education Act of 1989 the official aim of the educational policy was to lead 80% of the future generations to the level of the baccalaureate, and the situation was aggravated once more. Even if this aim included the Technical Baccalaureate and the *baccalauréat professionnel*, parents once more fostered the “*baccalaureate général*”.

Because of this, TVET teachers in France have to face a student body consisting of students considered to be “negative” by the standards of selection, not only in intellectual performance, but also in learning motivation and general behavior. The problem of “violence at schools,” what some rather euphemistically call “uncivil behavior” by certain sociologists is particularly widespread in vocational schools in the suburbs of the large cities. In opposition to the attitude of “workers’ solidarity” shown by former generations, these young boys and girls attending TVET schools do not seem to possess a collective identity as the bearers of a “working class culture.”

So many of them are poorly motivated by the metier they are going to be prepared for, since very often the choice of their “career” was made by the elimination of better options.

As a result of this situation, TVET teachers are often confronted with great difficulties with these students. There are two different manners in which those teachers can react.

Some of them show their weariness and do not seldom refuse these difficult working conditions. In the last years, there have been numerous teacher strikes as a result of violent incidents. Evidently, this situation does not contribute to improving the feeble image of TVET teachers, in spite of all efforts to raise status, payment and to decrease workload. Other teachers are incited by the difficulties of the situation to face up together to these problems and to introduce innovative multidisciplinary projects, partnerships with firms, personalized tutorships for students with difficulties. As a result of these two contradictory tendencies, the situation is quite different from one school to the other. It depends a great deal on the competence of the headmaster and his team in investing themselves in a team project.

4.1.2 Alternating training and the new identity of TVET teachers

Independent of the evolution of their “customers,” TVET has been totally transformed with regards to its content in the last twenty years by the creation of new curricula.

Nevertheless, the most troublesome evolution for TVET teachers was the development of alternating training models¹⁵. They have been introduced since 1978 as experimental training models. Since 1985, these models constitute a generalized way of learning. Now alternating training has reached most of the curricula in VET, including education and training on the post-secondary level (so called “Higher Technicians” see above). This is to say that longer periods of learning in the workplace alternate with learning in schools and that these working experiences are taken into account in the attribution of the diploma. This alternating system is called “alternation under school status” (*alternance sous statut scolaire*) in order to distinguish it from other alternating systems based on apprenticeships like the German “dual system,” where apprentices have a training contract with a plant, but also attend a part time school once or twice a week.

It is evident that this new way of learning has deeply changed the working conditions of TVET teachers. Although for a long time, TVET teachers were accustomed to having relationships with plants, these relationships were mostly discontinuous, bound to singular initiatives and, above all, they did not disturb the daily organization of work. Now however, the systematic practice of long practical training periods in the firms requires a higher flexibility in the teachers’ timetables. They must give more classroom lessons during the weeks when the students are in school.

¹⁵ See, for the following the papers collected in Troger 2000, in particular Eckert/Veneau 2000 and Pelpel 2000.

Moreover, they must visit their students in the plants, where the students are in practical training and these visits sometimes require long journeys. Teachers must also help their students find plants where they can receive practical training and therefore, they must have good relations with the economic world.

Finally, teachers must assess the results of the students' practical training together with the tutors named by the plant. This often requires complex negotiations, for it is evident that the pedagogical criteria of assessment are not necessarily the same as those of the employers. Empirical studies about these problems (cf. Agulhon, 2001) show notably that the tutors stress the importance of behavioral qualities more, whereas the teachers were more interested in controlling the accuracy of working methods. For the rest, the assessment of the students' practical training is, in a way, the assessment of their teachers' quality and also the quality of their school. A student having poor results in practical training will damage the reputation of his school, which could have the result that the firm would later refuse the students from this school for practical training.

The new usages considerably transformed the mutual relations within every school. We notice, in particular, tensions between the teachers of vocational subjects who were obliged to engage in the organization of practical training on the one hand, and the teachers of general subjects who often tried to avoid these responsibilities. They are, in any case, not competent to assess the students in practical training. Generally speaking, the TVET teacher had to negotiate and to reorganize the timetables, to centralize all information about the firms willing to accept the students, to negotiate with the parents the material conditions of the students (i.e. insurance against accidents, etc.). All these new tasks led, naturally, to a redistribution of responsibilities in every TVET school, not sometimes without tears.

It may be interesting to know in this context that a strike consisting of a few TVET teachers protesting against the modes of reimbursement of travel costs when visiting the students in practical training, led to a great strike movement of all teachers in spring 2000, which ended in the resignation of the then Minister of Education, Claude Allegre.

In this context, the teachers finally had to face a final difficulty, namely the competition of a growing apprenticeship. Within a period of 10 years, the number of students in vocational schools diminished from 800, 000 to 700, 000. The students "lost" essentially passed into the apprenticeship system: in 2000, there were 300, 000 apprentices, whereas 10 years earlier there weren't but 200, 000. The growing attractiveness of the apprenticeship system is not only due to the fact that apprentices are paid, but also that they

have fewer problems with integration into the labor market at the end of their training.

TVET teachers feel this competition with apprenticeship not only through the decreasing number of students in school-organized TVET, but also very concretely when searching for places for practical training in the plants. The apprentices do the same tasks, but the firms get tax reductions only for young people in apprenticeship, but not for students in practical training coming from the school system (full time vocational schools).

4.1.3 Trainers in adult education: Managers of training - Serving the employee and the plant

Even if it is not the central point of this paper, in order to understand the changing role of the TVET teacher, it seems necessary to present a sector of vocational training not yet considered in our analysis until now: adult education. It is not possible to describe in this context the history of French adult education in the 20th century, but it is essential to know that today's French adult education has at least three roots.

The first one is rather economic and has its origins in the economical crisis of 1929. Specially accelerated training courses for unemployed people were given to overcome unemployment, founded, as many people thought, in a lack of education. A similar situation was seen in 1945, when the state, in order to get the economy going, built the initial VET system and a system for continuing adult education under the supervision of the Ministry of Labor. At the same time, a network of engineers specialized in personal management, and having links to the Christian Trade Union movement tried to foster continuing education with the aim of appeasing social relations and by so doing to counter the trade unionism influenced by the Communist Party's propagating of class struggle (cf. Tanguy, 2001b).

A second root of adult education in this period was the popular education movement, "*Peuple et Culture*" which, apart from its cultural mission, was interested in training in the plants. The militants of this movement developed a special sort of "mental training," based on a technique of problem solving and group working (cf. Troger, 2001).

The third network that played an important role in the development of adult education was constituted by some social psychologists working for large plants. They disseminated in adult education, above all, the ideas of group dynamics based on Kurt Lewin or Karl Rogers.

We can see by this résumé that the origins of adult education are quite different from those of TVET. We find there the ideas of militant politics and an experimental spirit, rather than the system of schooling, which very early invaded TVET. This fact has consequences on the situation of the

teaching personnel. The trainers in adult education constitute their professional identity in opposition to teachers. They require different teaching methods, which take into account the requirements of the learner (as well as their previous experience) using group dynamics to facilitate the learning process.

Since the new legislation about initial and continuing VET in 1971, continuing adult education took on a new dimension. According to official statistical data, in 1998, more than 12 million employees attended courses in continuing education.

Among them, only 900,000 attended courses organized by institutions subordinate to the Ministry of Education. Due to the diversity of institutions offering courses in adult education, it is very difficult to estimate the number of trainers. They are several thousands, but it is rather impossible to establish a typology of the trainers. A certain number of them are employees of private firms; others belong to the teaching staff depending on the Ministry of Education. Most of them are part-time in adult education. Their common characteristic that makes the difference from “normal” TVET teachers is not visible. Their adaptability and their intellectual flexibility come from having to work with very diverse learners, who come with very different learning objectives. Most of them also have to organize their courses and many of them have even to search themselves for students. On the other hand, they have the chance to work with more motivated students than do TVET teachers in initial education.

Considering the role of trainers in adult education and comparing it with the new challenges coming from alternating training, we may be surprised that there is a certain convergence. More and more, the role of the TVET teacher resembles the professional profile of the trainer in adult education. The new requirement of his changing role pushes him to have more adaptability and flexibility. However, the rigid frame of his status as a civil servant leaves him only very little room to move towards innovations. Innovative behavior is not rewarded in a bureaucratic system.

In this context the question of recruitment and teacher training is relevant too. We may ask if the criteria of selection of TVET teachers as they are evident in the concours are really relevant to cope with the new challenges described above.

5. CONCLUSION

In the end, it seems that the French system of TVET in a school framework with teacher being educated and trained in a rather school-bound system finds now its limits. We may ask the question, whether this system is

still performing in the post-industrial society. On the other hand, the (relative) crisis of the apprenticeship system in Germany shows that an alternative system based on the main learning place as being in the plant has its own problems.

Seen in this light, the French system has its own particular qualities. It allowed the teachers to develop a set of performing pedagogical practices for initial VET, transmitted by the teacher training institutions. We may ask if this would have been possible by the firms (and their trainers) alone. Finally we must not forget that the teachers of TVET assume an important social task, when they take over the pupils with learning difficulties - we can't imagine what other institution could assume this difficult role.

The difficulties of adaptation to the new requirements of (post-) modern society of the two opposite training systems (school based in France, working place based in Germany) seem to show that the French way of fostering alternating training goes in a better direction. Nevertheless, teacher training and teacher recruitment has to follow.

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Chapter 6

TVET TEACHERS AND INSTRUCTORS IN GERMANY

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1. HISTORICAL DEVELOPMENT OF THE VOCATIONAL AND TECHNICAL TEACHING PROFESSION

The origin of organized vocational education and training in Germany dates back to the traditional apprenticeship of the trade guilds in the middle ages. According to this tradition only a master of a craft was allowed to educate and train his apprentices. In the periods of enlightenment and industrialization, when the education system was opened to a broader class base in the population, it was still the unique right of masters to transmit their skills and knowledge to their pupils. This idea is still stipulated in the Crafts Code. At the beginning of the 19th century, new vocational-oriented school types were established in order to impart additional technical knowledge and skills to the apprentices. Thus, the dual arrangement of vocational training in Germany was created. As a consequence the exclusive claim of a master for vocational training disappeared. In this time a new type of teacher was born: the VET teacher. VET teachers in Germany have a tradition that goes back approximately 150 years. The further development of the vocational schools brought up changing societal duties of vocational schools, which were always combined with different epochal requirements, ending in different models for educating VET teachers. From the beginning, the problem of an adequate VET teacher education model was discussed

intensively. Different regional TVET teacher education models have emerged throughout this historical development, which can be found in their structures nowadays. While the education of VET teachers in the commercial field has been, since its origin in 1898, realized in a university system. The nation-wide academic education of VET teachers in the technical field was not implemented at university level within educational reforms until the 1960s.

In comparison to the vocational training in a craft,¹⁶ systematic vocational training in the industry sector began in the 1920s. In addition to the masters of a trade, in-company instructors now began to train apprentices. The first regulation defining the aptitude and requirements of instructors were passed in 1969 with the Vocational Training Act and in the Instructor Regulations in 1972.

1.1 Development of the TVET Teacher Profession

The historical development of VET teacher training in the technical field was influenced by three principal barriers, which changed the function and duties of vocational schools (Stratmann, 1994). The external definition of VET purposes and objectives of the trade, Sunday and continuing VET schools formed the border for the requirements and ultimately of the education of TVET teachers. The first barrier was the collapse of the imitatio principle in the vocational education in the first part of the 19th century. The unique claim of the master to bear responsibility for the familial vocational education vanished. New external learning places (Sunday and craft schools) were established in order to impart an autonomous corpus of knowledge, which could not be learned by traditional imitation. The task of the new TVET teacher was an additional technical instruction in numeracy skills, drawing, mechanics and technology. The focus was rather on technical training and not on vocational education, which was still the exclusive right of the masters. The second barrier is represented by the educational and juvenile policy in the German empire at the beginning of the 20th century. During this time, VET schools became part of the public school system, leading to a new educational purpose for VET schools. The new task of VET teachers was not only technical training, but also civic education of the Prussian labor youth. The new task of VET teachers was as the educator of the Prussian youth. In this way, the VET schools were supposed to close the gap that arose from the erosion of the holistic master- apprentice relationship. The third barrier was the expansion of the VET system in the

¹⁶ Craft is used in the German sense meaning skilled small-scale production and services.

1960s representing the motive for the academic education of TVET teachers. The implementation of new VET school types leading to up to university entry qualification, the claim of scientific orientation in vocational education and training and the demand of the teacher profession associations was leading to the academic VET teacher education at university level. Now VET teachers had to impart technical knowledge in a scientific and reflective way.

1.2 Historical Development of Three Models of Education of TVET Teachers

In contrast to the education of VET teachers in the technical field, the VET teachers in the commercial field were, from the beginning, realized at university level. The first commercial college for VET teacher education was established in 1898 in Leipzig. In this time, the still existing form of VET teachers in commerce was created. The study course takes place at an institute for economics and business education, which usually belongs to the faculty of economics and social sciences. Since the 1920s, these universities award the academic degree ‘Diplom-Handelslehrer’ for teachers in economics and business education. This model could be characterized as the antecessor type for the VET teacher education in technical fields, which was not realized until the 1960s (Sommer, 1992). At the beginning of the 20th century, three prototypes of VET teacher education in the technical sector emerged.

1.3 The Engineer Model in the Southwest

In southwest Germany, a VET teacher education model oriented on the policy of trades was established. Training highly qualified workers for the labor market was the main objective of VET schools. The task of the VET teachers was to impart specialized theory as a part of the scientific knowledge base. In 1834, the Polytechnic College in Karlsruhe implemented a scientific oriented TVET teacher study course, which had been in place since 1857¹⁷. In the 1920s, technical universities in Baden and Württemberg offered TVET teacher training at the academic level¹⁸. Hence, in the

¹⁷ Apparently the idea of academic TVET teacher education first appeared in Kassel in 1830, where a higher trade academy was founded. Because of an argument between Hessian cities it was not realized (Lipsmeier 2003).

¹⁸ In Sachsen, there was a similar development. In 1855, a TVET teacher department for mathematics, natural sciences and technology at the Royal Polytechnic Academy in

southwest, academic trained members of the trade displaced the TVET teacher recruitment of elementary teachers with additional technical training. The overall concept of scientific orientation is also reflected in the study course, which was concentrated upon special branches of science or engineering. Educational Science was also integrated into the study course, but ranked last in terms of hours and importance¹⁹. The framework of TVET teacher education in the southwest is very similar to the current situation. The prerequisite for the 8-semester course of study was the general entrance qualification for university and work experience. After the first examination at university, the candidates had to sit for a second public examination, which tested their teaching skills.

1.4 The Seminar Model in Prussia

In Prussia, the biggest state in former times where the majority of VET teachers were employed, a second model of TVET teacher education emerged. The function of Prussian VET schools was – in accordance with the programmatic of Kerschensteiner – civic education. On the one hand, VET schools had to provide a minimum of technical skills enabling the apprentices to work in the growing industry. On the other hand, they had to support the political integration of the working youth into the Prussian authoritarian state (Kurtz, 1997, p. 72). At the beginning, the recruiting of VET teachers was done by elementary teachers trained by additional technical courses in the trade. Gradually engineers, technicians and masters were replacing the elementary teachers.

The overall concept for VET teachers was determined by pedagogical proficiency and sufficient technical knowledge in the vocation (Stratmann, 1982, p. 41). In 1913, a study course at the ‘Kunstgewerbe- und Handwerkerschule Charlottenburg‘ for full-time TVET teachers was eventually established. Hence, a systematic TVET teacher education for mechanics, building trade and handicraft began (Pätzold, 1995, p. 32). Until 1922, the seminar lasted one year, then two years. Only gifted practitioners (technicians and masters) with adequate generic education and at least three

Dresden was founded. Since 1924, a TVET teacher program was offered at the Technical University in Dresden.

¹⁹ The concept of the technical expert is not only represented by the education model, but also by the teaching methodology. In teaching practice, the primary goal was to impart specialized knowledge efficiently. It was Karl O. Hartmann who established in 1920, the inquiry method as the standardized methodology for VET teachers; even today it is still the dominant teaching method. Hence, the assumption is often made that this mono method replaces the pedagogical competence of teachers.

years of working experience or elementary teachers with teaching experience in VET schools were admitted to the program course. The program contained two basic subjects: firstly, vocational pedagogy with a stress on youth and developmental psychology; secondly, subject-related didactics oriented to the trades. The center of the TVET teacher education, thus, was not scientific discipline as in the southwest, but vocational practice.

1.5 Model of Independent Vocational Disciplines in Hamburg and Thuringa

During the Weimar Republic, Hamburg and Thuringa were governed by social democrats. There, a third model of TVET teacher education was developed. The purpose of vocational education and training in VET schools in these states was set up based on educational and not economic principles (Brechmacher and Gerds, 1993). In general, school functioned as a pedagogical institution, supporting holistic human education based on concepts of human pedagogy. The task of VET schools was to educate emancipated and socially integrated skilled workers. This, of course, had implications for teacher education. Universities offered TVET teacher education programs. The 6-semester course of study contained equal amounts of educational/ social science and the vocational subject. Particular trade-oriented institutions for each vocational field were established to provide this specialized knowledge. The philosophy-oriented educational department was conceptualized on the basis of German reform pedagogy. The prerequisite for the course of study was the general entrance qualification for university and a perennial work experience.

1.6 Professionalization and Academic Drift in the TVET Teacher Education

In the 1920s, an intensive debate about a general academic TVET teacher education at university level occurred throughout all of Germany. The VET Teachers Associations strongly supported this claim. At a meeting in 1922, the German VET Teacher Association passed principles for a modern VET teacher education system. According to these principles, teacher education should be realized in two stages: an academic scientific study course at university level in the whole empire, ending with a first state examination followed by a second pedagogical stage, ending with the second state examination. The teacher association regarded the study of the scientific subject at university level as the core element of TVET teacher education.

As a consequence, a widespread seminar model of TVET teacher education was rejected.

The teacher association pushed two claims: firstly, they intended to open TVET teacher education to high-school graduates by restricting access to the TVET teacher profession to practitioners with inadequate generic education. Secondly, they suggested a broader theoretical knowledge base and specialization of TVET teacher education combined with a higher attractiveness and appreciation of the profession (Pätzold, 1995).

Other societal groups, like policy, industry and craft, trade unions and the scientific community, did not support the demand of the teacher associations²⁰. TVET teacher education remained in the form of a seminar course, despite of the massive critique of the teacher association. In a sociological perspective, this period was of vital importance for professionalization, which was realized later in the 1960s.

The discussion about the implementation of a nation-wide academic TVET teacher education system started immediately after the Second World War, but was not realized because of financial reasons²¹. It took the Sputnik shock in 1957 for a fundamental reform and expansion of the entire German education system to be initiated. The reform also affected TVET teacher education. Now the former claim of the teacher association was supported by the political and economic system. The model of the TVET teacher courses at seminars for vocational pedagogy was closed and nationwide academic study courses at university level implemented in the single states until the 1970s (Sommer, 1992). The outer professionalization was reached with this step. In accordance with the federal system, different study courses were created, which were basically oriented on the initial traditions of the above-mentioned models²².

²⁰ Kerschensteiner was criticizing the 'academic mania' and 'university sickness' of the VET teachers. He feared that the VET schools would lose their practical orientation (Kurtz 1997, p. 76).

²¹ In the period of Third Reich, the regular form of VET teacher education was a seminar course at vocational pedagogic institutes. Regarding the VET teacher education, the re-commencement after 1945 was not really a new beginning. The institutes were closed and re-opened. The single states were relating to the three models again. But the widespread model in this time was the former Prussian seminar model.

²² VET teacher education in the former GDR was different from the western model. In the Soviet zone of occupation the officialdom was banned. Thus, VET teacher education was realized as a one stage and on subject course of study at universities. The 9-semester course of study was conceptualized through a coherent system with a close interrelationship of scientific studies, methodological studies and practical teaching training. Thus, a principle feature of VET teacher education in the former GDR was the high practice orientation to the school activity. Universities awarded the degree 'Diplom-Ingenieurpädagoge'.

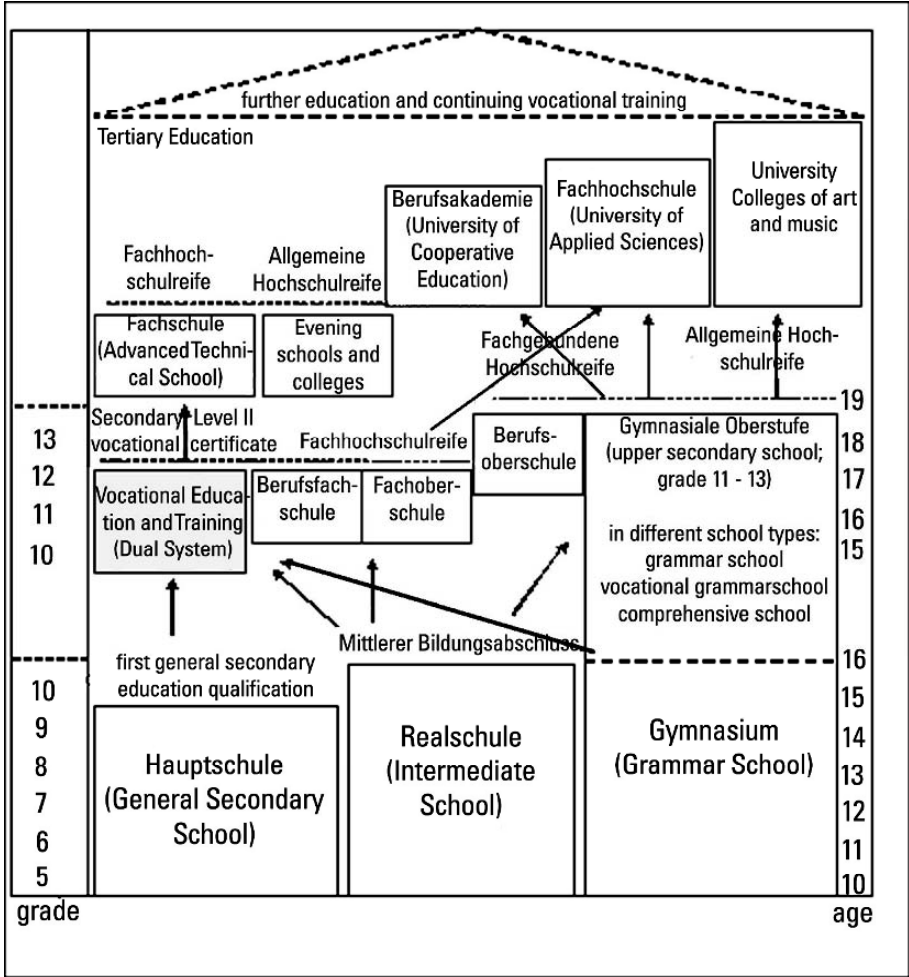


Figure 6-1. The basic structure of the German education system

To summarize, the ultimately successful implementation of the academic TVET teacher education is based on three motives: firstly, federal discussion about the modernization of the education system and the expansion of the VET system based on the overall concept of scientific orientation of teaching and learning, which necessarily needs scientifically educated teachers.

The task of VET teachers was the technical training, but also the educational duty to form 'socialist personalities' (Thomas 1992). After the reunification in 1990, eastern Germany took on the western model of VET teacher education.

Secondly, the reduction of the shortage of VET teachers was due to a higher attractiveness of this profession. Thirdly, the interest of the TVET teachers association, who were primarily aiming for professional advancement in terms of salary and thus equal footing to the teachers of the grammar schools (Kurtz, 1997).

1.7 Overall Concept Within the Educational Reform in the 1970s

The reform planners supposed that a direct transformation of scientific theories in educational practice is possible and that via the scientific education of VET teachers the intended improvement of education and training could be realized. According to the recommendation of the German Council for Education the teachers had to be qualified to participate in the scientific knowledge base and development of science, and to implement this knowledge without any delay of the learning process (Deutscher Bildungsrat, 1972, p.217). Hence, educational theories and technical theories apparently provide the proper teacher competence for school practice. Thus it was assumed, that science has an almost unlimited power to solve all problems in any societal field. In this concept the reformers believed in a technological theory-practice relationship leading to a straight subject-to-subject relationship between the scientific discipline and the teaching subject in VET schools. The technical education of VET teachers was now transferred to special sciences, like engineering, without clarifying what the science of vocation and work is actually about. The specialized sciences now became the new center of TVET teacher education, which displaced the original center, namely, vocation and the work practice. The understanding of a TVET teacher was shifting to the overall concept of a technical expert. Thus, the study of the scientific subject moved the importance of pedagogic to the edge of teacher education, as also happened with the philologists.

2. FIELDS OF EMPLOYMENT OF VET PROFESSIONALS

A core element of the German federalism is the so-called cultural sovereignty (*Kulturhoheit der Länder*). Educational and cultural legislation is therefore, primarily the responsibility of the states. In principal, each federal state bears responsibility for its own educational and cultural policy

in accordance with some federal principles. The states lend expression to the historical, geographical, cultural and socio-political aspects specific to their state and thus, to diversity and competition in the education system and in the field of culture. Detailed regulations are laid down in the individual state constitutions and in separate laws on the school system, on higher education, on adult education and on continuing education.

Generally speaking, there are three main working fields for VET professionals in Germany, which are vocational schools within the public school system, in-company initial training within the dual system and the rather unregulated sector of further education and continuing training (see figure and table 6-1).

2.1 Fields of Employment of VET Teachers

VET teachers with academic degrees work at vocational schools. Vocational schools belong to the secondary level II of the public education system, starting from grade 10. Planning, organization and supervision of the overall school system is the responsibility of the Ministries of Education and Cultural Affairs in the states in their capacity as the highest educational authority, and of the subordinate school authorities. The states are in charge of organizing the school structure, determining the content of courses and of teaching objectives. They also bear responsibility for the education and recruitment of teachers and the supervision of the work of teachers in public-sector schools.

Table 6-1. Fields of employment and qualification of VET professionals

Field of employment	Type	Qualification and Requirements
Vocational Schools as a sub-element of the public education system	VET teachers as civil servants	Higher education entrance qualification (Allgemeine or Fachgebundene Hochschulreife) Academic teacher study in two stages (9 semesters at university, 2 years of preparatory service at public teacher seminars)
In company training in industry, commerce and crafts	Instructors and Masters	Certificate in a vocation of the vocational field, 24 years Instructor aptitude, professional and personal skills proved by the instructor aptitude examination or master craftsman's examination
Further education (generic, political, cultural, vocational, in-company)	Instructors, Lectures, Docents, Trainers, etc.	Hardly not regulated

Vocational schools are, for the most part, state/ local authority schools maintained jointly by state and a local authority. The states provide the personnel costs, while²³ the local authorities – being school maintaining bodies – are responsible for the establishment and maintenance of schools and supplying them with material costs and other non-teaching staff.

The German vocational school system can be divided into two basic fields, which are the part-time and full-time vocational schools. Part-time schools are part of the dual system of initial vocational education and training. Full-time schools offer different courses and degrees. All school types are usually organized in vocational disciplines in common vocational school centers. TVET teachers usually teach in all school types in a vocational field and often in generic subjects. Apart from scientific teachers there are also instructors for the training in workshops.

2.1.1 Part-time vocational school – dual VET-system

In Germany, about two-thirds of all young people undergo vocational education and training in a recognized occupation within the dual VET system which usually lasts 3 to 3 1/2 years. The part-time vocational school is an autonomous place of learning. It works together on an equal footing with the companies participating in the dual vocational education and training. Training is carried out for 3 to 4 days a week at the workplace in companies and 1 to 2 days at part-time vocational schools (dual principle)²⁴. There are about 350 recognized occupations requiring formal training within the German dual system.

The function of the vocational school is to provide apprentices with a broad vocational education, and adding to the general education they have already received. The purpose is to enable them to carry out their occupational duties and tasks and to shape the world of work and society as a whole with a sense of social and ecological responsibility (KMK, 1991). According to these objectives, VET teachers have to equip their students

²³ Within the scope of school development programs and a higher autonomy of VET schools, the structural conditions in some states are changing presently and some VET schools are allowed to recruit their teaching staff independently.

²⁴ Together with companies providing training, school supervisory bodies and relevant bodies from industry, the vocational schools decide on how to organize teaching time. Teaching can be provided one to two days a week throughout the course or also be given in the form of coherent blocks. The aim of the different ways of organizing the course is to guarantee the best possible attendance rate of the apprentices within the companies providing training and, at the same time, to create a favourable situation in terms of educational gain and learning psychology.

with basic and specialized vocational training and impart the competence necessary to practice a skilled occupation within a structured course of training as well as to also foster the personal development of apprentices.

Apprentices attend the part-time vocational school for an average of at least 12 hours per week. About a third of the total teaching time at the vocational school is taken up with general education subjects, namely German, social studies and economics, religion and physical education. Foreign languages are included in vocational education to the extent that they are likely to be of importance in the student's future career.

There is a special full-time vocational school (*Berufsgrundbildungsjahr*), where the first year is spent in full-time training (or in co-operation with companies). The purpose of this basic vocational year is to provide the general knowledge and skills required in every occupational field as well as special theoretical and practical education in one particular career area and in this way lay the groundwork for subsequent vocational training in this occupational field.

Teaching in vocational schools is based on a framework curriculum (*Rahmenlehrplan*), which is developed by a national group of expert teachers. The framework is coordinated with the nationwide training regulation for in-company training for each occupation, which is developed in co-operation with the social partners. Because of the responsibility of the education system, each state can implement the national framework curriculum directly or modify it according to their specific educational purposes.

2.1.2 Full-time vocational schools

Berufsfachschulen are full-time vocational schools offering a wide range of courses of education and differing in terms of entrance requirements, duration and leaving certificates. Some types of *Berufsfachschulen* prepare students for an occupation or a course of training within the framework of the dual training system, while, at the same time, expanding the level of general education previously acquired. There is a special form of the two-year *Berufsfachschule* (in some states called *Berufskolleg*) leading to a state-certification as a technical assistant (e.g. specializing in biochemistry, garment making, information technology, mechanical engineering) or as a state-certified business assistant specializing in data processing, foreign languages, or secretarial skills. Technical assistants are predominantly employed in laboratories and facilities for testing and experimentation purposes. There are 28 specializations to choose from with different occupational titles, ranging from state-certified assistant for automation to

computer technology. Under certain conditions, the entrance qualification for the Universities of Applied Sciences (Fachhochschulen) can be acquired.

The Fachoberschule (technical secondary school) is a school type lasting two years, which takes students who have completed intermediate school. The program at the Fachoberschule concludes with a final examination after the 12th grade. This exam covers three general subjects (German, mathematics, foreign language) and individual specialized subjects (e.g. in engineering, business or administration). On passing the exam, students receive the higher education entrance qualification for the Universities of Applied Sciences.

The Berufsoberschulen (upper secondary vocational schools) have been established in some states in order to enable those who have completed vocational training in the dual system or who have five years' working experience to obtain a higher education entrance qualification. Because Berufsoberschule are an important opportunity for a second-chance education, they have achieved greater importance nowadays. Providing two years of full-time education in various occupational fields (e.g. technology, economy, agricultural economy, nutrition, domestic science), Berufsoberschulen lead to the higher education entrance qualification for universities. Attendance at the Berufsoberschule can also be on a part-time basis for a correspondingly longer period.

The upper secondary level (Gymnasiale Oberstufe) covers grades 11 to 13. The upper secondary level can also be realized in special vocational schools. This type of school is called Berufliches Gymnasium in some states and Fachgymnasium in others. In contrast to the Gymnasium, which normally offers a continuous period of education from grade 5 to grade 12 or 13, the Berufliches Gymnasium or Fachgymnasium has no lower or intermediate level. Admission to this school type is through a Mittlerer Schulabschluss and the satisfaction of certain requirements for admittance to the Gymnasiale Oberstufe or an equivalent qualification. The Berufliches Gymnasium/ Fachgymnasium leads, with one foreign language, to the subject-restricted entrance qualification for higher education (Fachgebundene Hochschulreife) and with a second foreign language – like the general upper secondary school – to a general entrance qualification for higher education (Allgemeine Hochschulreife). Apart from the subjects offered at a Gymnasium, these schools have career-oriented subjects like business, engineering, nutrition and home economics, agronomy, health and social studies, which can be chosen in place of general subjects as the second intensified course and are examined in the Abitur. Furthermore, Berufliche Gymnasien/ Fachgymnasien in some cases offer pupils the opportunity to obtain a double qualification in courses of education, via a combination of a

higher education entrance qualification and a vocational qualification in accordance with state law (e.g. for assistant occupations).

There are advanced technical schools (Fachschulen) within the tertiary sector. The aim of the continuing vocational training provided at advanced technical schools is to enable skilled workers with job experience to take on responsibilities in middle management. Graduates from Fachschulen figure as intermediaries between the functional sphere of graduates from university and that of skilled workers. Fachschulen offer 1 to 3 year courses depending on the vocational field. Two-year courses are available in about 90 different specializations in the fields of technology, business and design and lead up to a state-administered examination. The most strongly represented subjects include electrical engineering, mechanical engineering, construction engineering, chemical engineering and business management. Advanced technical schools only take students who have completed vocational training in a recognized occupation and have the relevant practical experience. Satisfactory completion of the advanced technical schools confers the occupational title of state-certified engineer/ business manager/ designer onto a student, depending on his/ her specialization, as well as other titles for the social work sector.

The whole vocational school sector and therefore the working conditions of VET teachers is characterized by a very heterogeneous structure in terms of school types, students, objectives, purposes, certificates and contents. One further feature is practice orientation and the necessity to co-operate with companies, chambers and boards of examination.

2.2 Field of Employment of In-Company Instructors

Vocational education and training is regulated by the national Vocational Training Act (*Berufsbildungsgesetz, BBiG*) from 1969. While vocational education and training and the VET schools are the exclusive responsibility of the states, the in-company vocational training is that of the Federal government. Within the Federal Government, the responsibility for adopting regulations lies with the relevant individual ministries (usually the Federal Ministry of Economics and Labor) in co-operation with the social partners. The bodies responsible for vocational training, such as the industry's self-governing institutions (e.g. chambers), regulate and supervise the in-company training. The Employers' and trade unions' representatives prepare the training regulations (*Ausbildungsordnungen*) for the in-company part of vocational training for the currently 350 recognized occupations requiring formal training in co-operation with the BIBB. These training regulations are then coordinated with the framework curricula (*Rahmenlehrpläne*) of vocational schools.

At the regional level, the business community's organizations (e.g. chambers of industry and commerce, chambers of handicrafts, etc.) are the competent bodies for supervision, recognition and consultation of vocational training in accordance with the relevant legislation. This means that the responsible authorities include regional and sectoral organizations from the various branches that perform governmental functions in the domain of vocational education and training. These authorities administrate and control the final examination within the dual system of vocational training.

The training itself is based on a training contract under private law between a training company and the trainee. The training companies assume the costs of the on-the-job training and pay the trainee a training allowance in accordance with the collective bargaining agreement in the sector concerned. The skills and knowledge to be acquired in vocational training at the workplace are set out in the training regulations and broken down in terms of content and time in a training plan by the training company or instructors.

According to the Vocational Training Act training companies and instructors have to fulfill certain criteria to be allowed to train apprentices. Conditions governing the training of in-company instructors are stipulated in federal law. According to the statutory provisions (§ 20 Vocational Training Act, § 21 Crafts Code) instructors must have necessary personal and technical qualifications for training young people. Generally, instructors must sit for an instructor aptitude examination to provide evidence of the first criterion, while their professional qualifications are used to judge whether they have the necessary technical skills. Since 1972, instructor aptitude ordinances (*Ausbildereignungsverordnung, AEVO*) have been adopted for industry and commerce, agriculture, the civil service and home economics and these were replaced in 1999 by a uniform directive. In accordance with this directive, candidates have to be 24 years old, possess a certificate in a recognized relevant occupation, (§ 76 BBiG) and must prove they have the necessary professional and educational skills by means of an instructor aptitude examination²⁵.

The content of training for in-company instructors is laid down in general terms in the instructor aptitude ordinance. Training is usually provided in courses taken alongside full-time employment with a total duration of 120

²⁵ 1974 the Federal Association of German Instructors (Bundesverband Deutscher Berufsausbilder, BDBA) was founded, because of the new vocational regulations, in order to organize and represent the profession of instructor and to professionalize the vocational training matters.

hours²⁶. However, participation in these courses as a means of preparing for the instructor aptitude examination is not compulsory. The instructor examination includes the following professional and work-related areas:

- basic issues of vocational training (e.g. objectives of vocational training, characteristics of the dual system, tasks, status and responsibility of in-company instructor);
- legislative framework (e.g. labor protection, accident protection);
- training issues specific to young people (need for a form of vocational training tailored to young people's needs, typical behavior of young people, health care for young people);
- planning and implementing training courses, including didactical presentation of contents and methodological issues of training.

The final examination consists of a written paper and a practical examination. In the written part, which takes 3 hours, the candidate has to work on case-based tasks in several of the named subject areas. The practical part (30 minutes) contains a presentation or a practical execution of a training unit, and an oral examination. Every candidate is awarded a certificate detailing whether they have proven that they possess the necessary pedagogical knowledge of professional and work-related issues.

Within the crafts area, an instructor has to complete the master craftsman's examination. The instructor aptitude examination is already a component part of the examinations in handicrafts, agriculture and home economics²⁷.

Responsibility for the examination of in-company instructors lies with the bodies responsible within the dual system of vocational training, such as the industry's self-governing institutions (chambers). These institutions are responsible for adopting examination regulations and for setting up examining boards to conduct aptitude examinations for instructors.

²⁶ In August 2003, the government suspended the instructor aptitude ordinance for 5 years in order to support small and medium enterprises participating in vocational training. Apparently smaller companies have problems releasing employers for the instructor training and paying 500 Euros for the examination.

²⁷ In November 2003, a reform of the Craft Code was decided. Thus, the master examination for running a company and thus, for vocational training was eased. Now only 29 out of 94 in certain dangerous professions (e.g. roofer, spiderman) the master is necessary. Nevertheless the pedagogical knowledge still has to be approved.

2.3 Field of Employment in Continuing Education²⁸

Continuing and adult education legislation describes continuing education as an independent education sector, which incorporates continuing general and political education and continuing vocational training. Continuing education in Germany is regulated by the state to a lesser degree than are other areas of education. The activities of the state in the field of continuing education are restricted to laying down principles and to issuing regulations relating to organization and financing. State regulations are aimed at establishing general conditions for the optimum development of the contribution of continuing education to life-long learning. The justification given for this is that the diverse and rapidly changing demands on continuing education can best be met by a structure which is characterized by diversity and competition among the institutions and the range of courses and services on offer. The aim is that the wide range of institutions should meet the diverse interests of those in continuing education. All state legislation includes regulations, which recognize their freedom in the preparation of curricula and independence in staff selection. However, most legislation stipulates the qualification requirements demanded of the teaching staff. A central principle of continuing education courses is that attendance should be voluntary. Institutions of continuing education are local adult education centers (*Volkshochschulen*), public institutions, private institutions, churches, trade unions, chambers, associations, academies, universities and others. However, companies invest about half of the whole amount of further education (17 of 40 billion Euro in 2001). Responsibility for continuing vocational training – like initial vocational training – generally rests with the chambers based on the Vocational Training Act and the Crafts Code.

In the various institutions of continuing education there are various teachers, lecturers, docents, instructors and trainers with different educations and backgrounds. They could be pedagogues, engineers, economists or other non-pedagogically trained specialist. Usually they work part-time. Because continuing education is basically a free market system, the relevant institution manages the recruiting of the teaching staff. For academically trained VET teachers this field of employment is only a border area. In contrast, instructors also work in the field of in-company continuing training, especially in large-scale enterprises.

²⁸ In Germany, there are no statistics available that show details about the area of further education, the number of institutions, docents, etc.

2.4 Statistics

The tables 6-2 and 6-3 show the distribution of vocational schools, students, teachers, apprentices and instructors in 2002/03²⁹.

Table 6-2. VET school, students and teachers in vocational schools 2002/03

Type of school	Schools	Students	Teachers ³⁰	Female [in%]
Part-time vocational schools within the dual system	1.727	1.733.200	50.500	34,5
1 year full-time basic vocational schools (Berufsgrundbildungsjahr)	562	43.200	3.300	26,5
1 year full-time preparatory vocational schools (Berufsvorbereitungsjahr)	946	79.500	6.100	39,1
Berufsfachschulen (full-time vocational schools)	3.402	452.300	32.100	38,3
Fachoberschulen	842	106.100	5.800	50,0
Berufliche Gymnasien/ Fachgymnasien (upper secondary schools)	524	108.600	8.400	40,8
Berufsoberschule/ Technische Oberschule (upper secondary vocational school)	89	12.500	800	36,7
Fachschulen (advanced technical schools)	1649	156.000	8.900	45,8
Others (study academies)	81	7.100	900	59,4
Total:	9.850	2.699.700	116.800	40,4

²⁹ According to some estimation, the VET teacher amount will drop to half by 2010. Thus, there will be a yearly need of 6.100 full-time VET teachers between 2000 and 2005 and 3.200 teachers between 2005 and 2010 (Jeschek 2000). Especially in the vocational field of electrical technology and metal technology there is a huge need, because the average age of VET teachers is 53 years. Plus the number of students is very small. Experts suppose that only 10 to 20 % of the need can be satisfied by regular educated teachers.

³⁰ Full-time and part-time teachers counted in terms of the equivalent number of full-time teachers.

3. TVET TEACHER EDUCATION

Vocational teachers are prepared for a senior service career with the status of civil servants. Responsibility for teacher education for all types of schools rests with the Ministries of Education and Cultural Affairs of the states. The relevant statutory provisions include teacher education legislation, study regulations for teacher training courses at universities, examination regulations for the First State Examination, training regulations for the preparatory service (*Vorbereitungsdienst*) and examination regulations for the Second State Examination. The First and Second State Examinations are conducted by the state examination authorities or boards of the states.

Table 6-3. Apprentices and instructors in 2002

Sector	Apprentices	Female [in %]	Instructors ³¹ (and Masters)	Female [in %]
Industry and trade	850.200	41,4	428.069	26,62
Agriculture	37.100	26,4	20.996	12,23
Civil Service	45.200	65,3	29.333	27,02
Liberal Professions	148.800	95,6	101.616	24,37
House economics	12.900	93,8	3.909	97,08
Crafts sector	527.900	22,6	–	–
Total:	1.622.400	42,86	583.923	26,20

3.1 Framework of the Standing Conference of the Ministries of Education and Cultural Affairs

The Standing Conference of the Ministers of Education and Cultural Affairs of the states (*Kultusministerkonferenz, KMK*) adopted a national framework for the education and examination of teachers for the vocational disciplines in vocational schools in 1973 in order to set up a common national basis and minimum standards for VET teacher education. The framework was reformed in 1995. All courses for teacher education of the states have to respect these structural conditions.

Teacher training is basically divided into two stages: the first stage is a 9-semester course of study at a university, with a total of around 160 aggregate hours of weekly attendance ending with the First State

³¹ Every year, there are about 50.000 instructor aptitude examinations and 30.000 master craftsman's examinations successfully completed.

Examination (or Diploma examination in some states)³². The second stage is the practical pedagogical training in the form of a preparatory service, which takes place in public teacher training colleges (Studienseminare) and training schools³³.

The basic entry requirement for teacher training courses is the higher education entrance qualification, which is acquired after attending school for 13 years and passing the Abitur examination. Students must also complete a period of work experience lasting at least 12 months, which must be relevant to the vocational subject.

The study program at the university in the first stage contains the following parts (see figure 6-2):

- the vocational subject in a vocational field (including subject-related didactics);
- a second (usually general) subject (e.g. mathematics, physics, politics, German, English, physical education); educational science focused on vocational pedagogy with compulsory studies in educational theory and psychology; plus a choice of studies in additional study areas, like social sciences, labor psychology, organizational psychology; labor education, factory education;
- teaching practice at schools (currently 6 months for all teacher study courses).

The Standing Conference of the Ministers of Education and Cultural Affairs of the states proposed that half of the course of study be an in-depth study of a vocational subject area. The other half includes studying educational science and a second subject, which can be a subject of general education or a subject relevant to a number of occupational fields or an additional vocational subject area at an approximate ratio of 3:5.

The state examination boards, which are subordinate to the ministries responsible for the school system, bear responsibility to hold the First State Examination. The examination usually consists of the following:

- a dissertation in the first or second subject or in educational science/vocational pedagogy;
- a written and oral examination in the subjects studied, mainly on academic aspects of the subject, but possibly also on subject-related didactics and teaching methodology;
- an examination in educational sciences focused on vocational pedagogy;

³² Individual states are currently developing and implementing Bachelor and Master study programs to meet the Bologna Process. Students have to be awarded a Master's degree to work as a teacher in public-sector schools.

³³ This structure separated the institutions imparting scientific knowledge and practical preparation for the teacher profession.

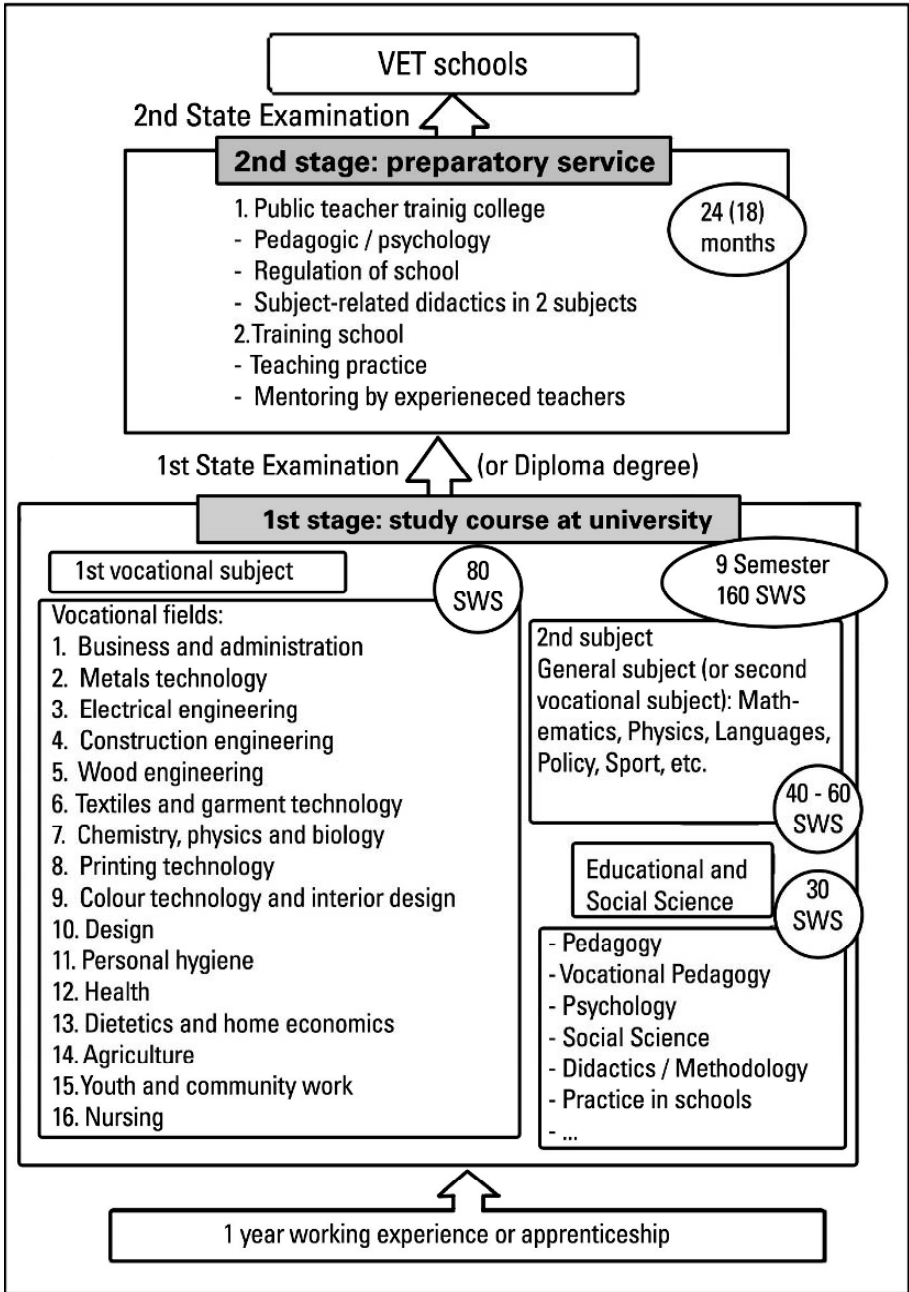


Figure 6-2. Principle structure of VET teacher education

For all teaching careers, studies at a university are followed by a second stage of teacher training which is a two-year (now reduced to 18 months) preparatory service. It involves sitting in on lessons, guided and independent teaching at training schools and studies in educational theory and subject-related didactics at teacher training colleges. In the seminars there is an emphasis on reappraising and consolidating experience gained through individual practical training. The preparatory service concludes with the Second State Examination. This is the pre-requisite for ultimate employment in a teaching career, but does not guarantee a teaching position. It has to be taken before a state examination board or a state examination commission and usually consists of four parts:

- a major written paper relating to educational theory, pedagogic psychology or subject-related didactics in one subject;
- an examination on basic questions of educational theory, educational and civil service legislation and school administration and occasionally on sociological aspects of school education;
- an examination on didactic and methodological issues in both subjects;
- practical teaching examination involving demonstration lessons in both subjects.

3.2 Models and Conceptualization of the Vocational Disciplines in TVET Teacher Education

The historical development of the VET teacher education system has led to a different conceptualization of the vocational disciplines following regional traditions. All existing models of the vocational subjects respect the KMK framework, but are different in the content-related design. Nowadays, there are basically three models for the technical vocational disciplines (Rauner, 1993):

1. The dominant engineer model in western Germany. During the first stage, the vocational discipline is integrated into the corresponding study course of engineering. This means that students study a part of the engineering curriculum. This model suggests that the vocational school subject is equivalent to the scientific subject. Subject-related didactics is the bridge between scientific subjects and school subjects. In fact, this function of subject-related didactics is not realized because of the small time range in the study courses.
2. The model of self-determined vocational-technical disciplines, which is cultivated in Hamburg, Bremen, Flensburg and some universities in eastern Germany (Dresden, Chemnitz). The origin of this model relates to the historical orientation of the craft.

3. The model of accepting the more practice-oriented study course at a University of Applied Sciences. The degree of an engineering course is equivalent to the vocational subject. Then, the students study an additional (shorter) course in vocational pedagogy and a second subject at university. This model is very common, especially in times of a VET teacher shortage. Most states run different recruitment models, which are not based on common standards.

Table 6-4 illustrates the typical structure and contents of the engineer model at the University of Karlsruhe, which represents one of the most traditional TVET teacher training models. The study course of the vocational subject is completely realized at the faculty of electrical engineering. The TVET teacher knowledge corpus in the vocational discipline, therefore, is based on the curriculum of engineers. The institute of vocational pedagogy also offers lectures and seminars in educational science, vocational pedagogy and didactics and teaching methods. There is only one specialized seminar in subject-related didactics.

Table 6-4. Typical study course for VET teachers in the vocational field of electrics/ electronics

Faculty of Electrical Engineering	Institute of Vocational Pedagogy
Basic Studies Electrical Engineering 4 Semester 74 SWS:	Educational Science/ Vocational Pedagogy 1-8 Semester 26 SWS:
<ul style="list-style-type: none"> – Mathematics for engineers – Experimental physics – Programming – Foundation of digital technology – Introduction in computer science – Linear electrical networks – Electro-dynamics – Theories of probability – Electronics Circuits – Electro-physics – Integral transformation – Laboratory 	<ul style="list-style-type: none"> – Introduction in educational science and vocational pedagogy – Organisation of vocational education and training – Regulation of vocational education and training – 1 seminar in psychology (pedagogical psychology, development psychology or psychology of work- and organization) – Introduction in sociology – 2 seminars in vocational pedagogy – Preparation and evaluation of practical school stage
Main studies electrical engineering 4 Semester approx. 35 SWS Specialization in:	<ul style="list-style-type: none"> – 1 seminar in didactics in vocational education and training – 1 seminar in didactics in general technology – 1 seminar in subject-related didactics (electrical engineering)
<ul style="list-style-type: none"> – Communication technology or – Power engineering or – Information technology 	

This example illustrates that the dominant engineer concept resulting from the historical debate and the previous claim of professionalizing VET teacher education in the 1960s. Straight after the implementation of scientific VET teacher education at university level, the conceptualization of the vocational subjects and subject-related didactics were criticized by members of the scientific community (Zürneck, 1967; Grüner, 1974; Rauner, 1993). The critique was focused on the traditional content derived from the engineering sciences and also on the scientific construction of subject-related didactics. It was argued that knowledge from the engineering sciences is basically different from a worker's knowledge of how to perform work, manufacturing, operate and repair technical systems or machines. Even the knowledge of an engineer as a practitioner has to be regarded as being very different from the theoretical knowledge he has studied in university courses. In former times, the reference point for VET teacher education was the trade and working practice, whereas today, the scientific discipline should provide the knowledge base for VET teachers. This paradigm shift from an understanding of a work-related subject to a technology-driven understanding of the vocational discipline was not reflected (Rauner, 1993).

The importance and conceptualization of subject-related didactics, supposedly the core of VET teacher competence, was also criticized. In fact, in most study courses at university it does not play a dominant role within the first stage (Bader and Kreutzer, 1994)³⁴. In the second stage, students get to know pragmatic teaching methods rather than a systematic and coherent theory of subject-related didactics. Here, students prepare to pass the Second State Examination and become civil servants. The understanding of the function of subject-related didactics usually is reduced to the development of teaching methods for the didactical reduction of scientific contents and its transformation into teaching practice (Gronwald and Martin, 1998, p. 94).

In the 1990s, the HGTB, an organization of several university institutions providing VET teacher education in the technical sector (HGTB³⁵) began establishing a science of VET in its own right; not only with respect to didactical issues but also concerning the content of learning. The need to foster VET teacher education towards practical knowledge and skills focused on work process knowledge as one core of VET science has also reinforced

³⁴ The quantitative analysis of the time amount of subject-related seminars illustrates the marginal meaning of subject-related didactics in the study course at university. The average is 6.3 aggregate hours of weekly attendance (SWS). In the states, the amount varies from 1.8 SWS (Baden-Württemberg) to 9.3 (Hamburg) (Bader/Kreutzer 1994).

³⁵ Arbeitsgemeinschaft der Hochschulinstiute für gewerblich-technische Berufsbildung (Bannwitz and Rauner 1993). The HGTB was replaced by the GTW (Arbeitsgemeinschaft der Gewerblich-Technischen Wissenschaften und ihre Didaktiken) in 2002.

research activities which formerly concentrated more or less on didactical questions and teaching environments (Rauner and Fischer, 2002).

Table 6-5. Fields of study and research in vocational technical fields

<p>1. Development of occupations and occupational fields</p> <ul style="list-style-type: none"> – Historical development of occupational field – Development of trade and industry and key technologies – Current occupations and their organization – Future developments of vocational work in the occupational field in the light of the inter-relationship between technology and work and social change through global economic and industry-cultural developments 	<p>2. The learning and teaching contents of vocational education and training processes</p> <ul style="list-style-type: none"> – Work oriented knowledge its justification, systems and organization in the form of curricula, occupational fields, teaching and learning materials, teaching aids, media, design of learning facilities and institutions – The analysis, shaping and evaluation of vocational education and training processes – The learning environment – The contents and methods of vocational education and training in relation to occupations and occupational fields
<p>3. The analysis, shaping and evaluation of occupational work in the light of learning contents and learning opportunities</p> <ul style="list-style-type: none"> – Work organization and organizational technologies – Organizational learning (including forms of reintegrating work and learning e.g. learning organizations, integrated production, learning islands) – Competence and qualification 	<p>4. Analysis, shaping and evaluation of technology in the light of continuing learning and the development of professional expertise</p> <ul style="list-style-type: none"> – The shaping of technology in different specialist `expert areas within the occupational field – Products (in the sense of technologies to be produced) and process technology – Sectors of work craft and technology and industrial work and technology including the sectors energy technology and energy supply, and information and communication technologies – The shaping of computer-aided working systems – The construction, development and updating of expert systems and their integration in networked technologies

Since one of the central principles of vocational education and training is the ability to co-shape work and technology (Rauner, 1988; KMK, 1991), then similarly, the shaping of technology within the work process forms a central focus for the education of VET professionals and for research in VET and HRD. Thus, the inter-relationship between work, technology and education/ qualification provides the framework for ‘vocationally specialized programs’ in training VET professionals within the university system. At the same time, it represents the agenda for VET research. The outline develops four different fields of study for VET professionals in vocational technical

fields (Rauner, 1993). It should be noted that the program links interdisciplinary research with learning and teaching practice. Therefore, there is the need for close co-operation between the vocationally specialized study course and the learning of general vocational pedagogic and didactics. The fields of study are in table 6-5 (Rauner, 1995; Wolf, Pangalos, Rauner, 2000).

4. PRACTICE OF TEACHING AND PROFESSIONAL REALITY

4.1 Structural Conditions Within the TVET Public School System

Teachers at public-sector schools in the states in western Germany usually have the professional status of civil servants who are engaged by the states (80 % of all teachers). The career structures for civil servants are divided into four levels. According to this classification, teachers at vocational schools come under the highest level, which is senior service. This level is divided into three areas (A13 *Studienrat*, A14 *Oberstudienrat* und A15 *Studiendirektor*). In exceptional cases, teachers can be taken on as salaried employees on the basis of fixed-term or open-ended employment contracts³⁶.

Following successful completion of the preparatory service, newly qualified teachers can apply for permanent employment at public VET schools, but there is no legal entitlement for that. An appointment to a permanent post is made within an application procedure according to the criteria of aptitude, qualifications and record of achievement and on the basis of current vacancies. A decision on recruitment is made centrally at the relevant ministry or school administration³⁷ Successful applicants are usually

³⁶ The majority of teachers in eastern Germany currently hold the status of salaried employees. The KMK reached an agreement in 1993 on the recognition of teacher training courses in the former GDR and their assignment to conventional career paths in order to clarify the salary groups of teachers who received their training in the former GDR. The agreement has helped to ensure that regulations are drawn up in most of the states in eastern Germany under which teaching staff can obtain civil servant status and be integrated into the salary structure of the states in western Germany (Jonen 2002).

³⁷ In some states, some of the positions are also advertised with the profile of a particular school in mind and the respective school takes part in selecting the applicants. In such cases, the applications are sometimes to be sent directly to the respective school, however,

appointed as civil servants on probation. During the probationary period (usually 2 years) a teacher's aptitude and performance are monitored with regard to his future appointment as a permanent civil servant.

The only relevant criteria for promotion are aptitude, qualifications and record of achievement, and not length of service. More senior positions may be established only in such cases where the functions associated with them are of tangibly greater value than those of the lower salary group. Nobody can be promoted to a higher scale without a change in his responsibilities or position. Before a decision on promotion is made, the professional performance of the teacher is assessed. According to the guidelines from the Ministers of Education and Cultural Affairs, an appraisal must cite the basis for assessment (e.g. talk with the teacher concerned, performance report by head teacher, visit to lesson) and the assessment criteria (knowledge of subject, teaching record, professional conduct). Apart from an overall verdict on the teacher's performance up to that point, the assessment usually ends with proposals pertaining to his future career.

The regulations for teacher salaries are based on the Federal Act on the Remuneration of Civil Servants. The remuneration received by teachers with civil servant status consists of a basic salary, a family allowance and other allowances. The basic salary depends on salary group and the seniority grade (based on the age of becoming teacher with civil servant status). The gross annual salary varies between 40,000 and 55,000 Euros.

School supervisory authorities exercise academic supervision, legal supervision and staff supervision within the school system. Academic supervision concerns the teaching and educational work carried out by schools. The school inspectors support and foster the work of the school, ensure that curricula and other legal provisions are being adhered to and that teaching and education are being conducted professionally using appropriate methods and improved wherever possible. Visiting schools, observing lessons and providing advice at the school level, carry out academic supervision. In fact, this type of supervision is not executed very often. Legal supervision involves monitoring the legality of the management of what is called external school affairs and the school's maintaining body. School supervisory authorities exercise staff supervision over teachers and head teachers at public-sector schools, thus ensuring that all teaching staff are carrying out their duties (Jonen, 2002).

School administration and school supervision in Germany is oriented on a traditional bureaucratic model. Formalization, standardization and

the appointment is not made by the school itself but by the Ministry of Education and Cultural Affairs or by the school authority that reports to it.

hierarchical control are the main features of this concept. In this model, the teacher is at the end of the organizational level. Teachers do not have a large influence on decision-making or educational planning. Compared to other classical professions, the autonomy of teachers is limited. The existing teacher associations have almost no influence on the development and supervision of the teaching profession. He or she is a civil servant, legally obligated to his employer. On the one hand, the status as a civil servant takes autonomy; on the other hand, it guarantees independence. Autonomy of the teacher can be characterized as classroom autonomy. Within the classroom or the teaching practice, respectively, the teacher has the overall freedom and responsibility for his pedagogical actions. Teacher activity usually is not controlled by the state or school managers. Certain laws, ordinances and curricula restrict this pedagogical freedom. Some people say that this freedom is restricted to the choice of teaching methodology in order to teach the defined curricular contents. The VET teacher profession in a classical concept is a semi-profession. VET teachers have a sophisticated education at a high scientific level, but their autonomous acting is restricted by the state.

4.2 Objective Tasks of TVET Teachers

In Germany, a precise occupational profile or description of the tasks of VET teachers does not exist. The German Education Council (1965-1975) defined in its Structural Plan for the German Education System, the general tasks of all teachers, namely teaching, educating, advising, assessing and innovating (Deutscher Bildungsrat, 1972, p. 217). There is still a consensus about this general description of teaching responsibilities. The KMK commission for teacher education stipulated teachers' responsibilities very similarly. The core task of a teacher is the intentional planning, organization, execution and reflection of teaching and learning processes, including the sub-tasks of teaching, educating, diagnosing, assessing and developing competence (Terhart, 2000, p. 15).

The working time of teachers encompasses teaching time and time for other tasks. At vocational schools, VET teachers teach between 23 and 28 hours (45 minutes lessons) depending on the state. Besides the core task, planning and giving lessons and assessing learning outcomes, teachers also have to take over administrative tasks. This consists of keeping a class-register, making out certificates and notes, looking after laboratories, materials and equipment, participating in school conferences. Some teachers also have to make up class schedules; others also take over managerial duties, e.g. leading a specialist department. All of these mentioned administrative tasks are not counted as official working time. Teachers are also involved in teacher training in the second stage, e.g. mentoring newcomers.

The Ministries of Education or the subordinate state academies bear responsibility for the development of curricula based on the national framework and didactical materials or manuals. Usually certain expert teachers work in commissions on this task.

Within the VET system, especially the dual system, co-operation with external partners plays an important role. Teachers participate in the commissions for examination. This principle is stipulated in the Vocational Training Act. In a best-case scenario, teachers and instructors co-operate at a micro-level. This could be the didactical coordination of learning contents or even the collective organization of projects. Co-operation between the learning places is a structural feature of the dual system, but empirical findings illustrate that it is not working systematically. Usually this co-operation is reduced to learning weaknesses of students, discipline problems or to the formal aspect of examination (Pätzold and Walden, 1999).

The debate about evaluation in the education system, in other words the systematic assessment of organizational structures, teaching and learning processes and performance criteria with a view to improving quality did not start in Germany until the end of the 1980s; later than in other European countries. Hence, school development and quality assurance is not yet established. In some states, there are pilot programs for VET schools transforming to community colleges or centers of excellence. Within this transformation process, teachers are integrated into the development of school, staff and lessons. Within this scope, different types of quality management systems (e.g. ISO 9000, EFQM, Q2E) are tested.

4.3 The Knowledge Base of TVET Teachers

The German Education Council stipulated two areas of competence for all teachers, namely, specialized competence and pedagogical competence (Deutscher Bildungsrat, 1972, p. 220). Especially in the VET field, this description constitutes the crucial problem in the education and teaching practices of VET teachers. It is reducing the competence debate to the simple question of whether a VET teacher is a specialized expert for the subject or a pedagogue without providing any clarification (Münk, 2001, p. 15).

The KMK commission for teacher education described the competence profile more precisely. Besides knowledge of the subject matter, subject-related didactics, educational sciences and psychology, a teacher also needs a meta-competence for diagnosis, evaluation, co-operation and quality development. The commission divides the knowledge base into three dimensions, namely, profound scientific knowledge, situated flexible routines and a specific professional ethos. Scientific knowledge is a prerequisite of teaching, but the specific structures and dynamics of the teaching profession

also require a differentiated repertoire of problem-based and situated patterns, which are based on routines and experience and used and modified in the concrete teaching situation. The professional ethos represents valuable norms for teachers. It is required that the professional teachers acquire this ethos³⁸.

In Germany, there are no empirical findings describing the real knowledge base of VET teachers acquired in their past history and used in teaching practice. According to some studies of VET-teachers in technical fields, the knowledge base is basically determined by the curricular knowledge and by the relevant subject-matter knowledge. The main focus of teaching is the transformation of curriculum contents, which are derived from the related discipline. Thus, the dominant understanding of the VET subject is scientifically driven. The problem in the VET field is that learning contents have to be contextualized to a concrete occupational field. Often this practice-relation is realized by phenomenon or technological schemata, but not through solving real practical problems (Bauer, 2003, p. 179). VET teachers develop practice out of theory with abstract meta-technological theories. The pattern of contextualization is quite remarkable, because VET teachers in Germany usually have a high degree of practical experience, acquired by a proper apprenticeship or by working as engineers.

Other studies found that VET teachers in technical fields have some deficits in the area of applying and contributing technical systems, which is a core dimension of skilled work (Jenewein, 1994, p. 283). This knowledge is not provided in engineering or in VET teacher study courses.

Regarding the pedagogical knowledge, studies in general education illustrate that teacher action is not based on educational theories, but on subjective theories developed in everyday practice. Teachers are acting on the basis of experience and intuition.

4.4 In-Service Teacher Training

In-service training also belongs to the responsibilities of the Ministry of Education and Cultural Affairs of the States because it is the highest school supervisory authority and usually the employer of teachers. Most states define the goals of in-service teacher training in teacher training legislation

³⁸ Since VET teacher have existed, there has been a debate about adequate competence of this profession. VET teacher competence is often described in competence categories like, specialized competence, competence in didactic and methodology, social competence and personal competence (Kröning *et al.* 2001). In Germany, there is no precise description of the knowledge base of VET teachers for each vocational field or domain.

or school legislation. Details about organizations, which provide in-service teacher training, and about applications, admission and release from teaching duties for attendance of courses are regulated by directives. The duty of teachers to undergo in-service training is expressly laid down in all states by law or ordinance, while it is the duty of the employers (usually the Ministries of Education and Cultural Affairs) to ensure that suitable training programs are provided.

State-run in-service teacher training is organized in the states at central, regional and local levels. In-service training can also take place within schools or in the form of guided private study. In order to organize in-service teacher training at central locations, all states have established state-run in-service training institutes (state academy or academic institute for in-service teacher training), which are subordinate to the Ministries of Education and Cultural Affairs as dependent state institutions. In-service teacher training at the regional level is conducted differently in each state by the institutes for in-service teacher training and their branches. In-service teacher training within schools is organized and carried out by schools for their own teaching staff or some members of their teaching staff. Training courses are also offered by non-public bodies (e.g. associations which bring together school and industry)³⁹.

In-service training serves to maintain and extend the professional skills of teachers. It helps teachers to meet the current requirements of their teaching career and to fulfill the educational mission of their school. Attendance of in-service training courses serves to deepen and extend the knowledge and skills in the fields of educational theory, psychology, didactics and subject-related studies which the teacher requires as part of his job. The range of subjects covered by in-service training is extremely broad. The subject matter includes topics relating to general and school education, sessions on subject-related didactics and studies, courses dealing with key current issues and introductions to new curricula. In the vocational-technical field, the majority of in-service training takes place in the subject in order to actualize the technical knowledge and being familiar with technological development. Pedagogical issues usually rank at the bottom.

Attendance of courses for in-service training for teachers has no impact on the appraisal, salary or career development of teachers. However, it can have an indirect effect in that regular attendance of in-service training courses is viewed positively in applications for senior posts (such as head teacher).

³⁹ In some states the main target group of central in-service training are the subject advisers who themselves organise and hold in-service training courses for teaching staff.

5. STATE OF THE ART AND FURTHER PERSPECTIVES OF PROFESSIONALIZATION

5.1 Teacher Education

Recruitment, education and professional work of VET teachers belong to the core topics of VET research in Germany. The amount of literature regarding this field is not countable. However a precise, theoretically founded and empirically based professional profile of VET teacher does not exist. This critique also refers to studies on the quality and effects of teaching practice in VET schools.

There are several studies on VET teacher education carried out since the 1960s. In the majority of the studies, teachers had to retrospectively evaluate their own biography (Nickolaus, 1996). Most studies found two central points of critique:

- A weak practical orientation of the study of the subject matter or a problematic theory-practice-relationship, respectively. In most studies teachers were appreciating their own practical experience gathered as skilled workers or engineers more than the study course at university.
- A missing connection between studies of educational and social science and concrete teaching practice. Therefore the study courses at university do not provide practical pedagogical skills.

These findings illustrate that new forms of education for VET and HRD professionals need to be organized on the basis of a new system of didactics, which recognizes the relationship between technology, education, training and work. Such vocationally specialized programs aim at providing competencies and expertise in the social shaping of technology within the work process domain and in the context of different occupational fields. The new programs of study and associated research provide the basis for the establishment of vocational education and training as a scientific area of study at university level (Attwell, 1997). The ‘working party technical VET science and its didactics’ (GTW⁴⁰), the successor of the HGTVB, promotes the dissemination of the VET science concept at university (Gerds, Heidegger and Rauner, 1999).

The KMK commission for teacher education promotes a stronger integration and co-operation between all stages and institutions of the teacher education system. Many experts believe that the fragmented teacher

⁴⁰ Arbeitsgemeinschaft Gewerblich-Technische Wissenschaften und ihre Didaktiken.

education system with isolated institutions and subjects is reducing the quality of the system. The discussion about a stronger integration and co-operation between all institutions and stages has lasted for several years, but still, new methods of communication and standards could not yet be established.

With respect to the in-service training in 2001, the national program, ‘innovative concepts of VET teacher education in the second and third stage’ was launched. 28 pilot projects are working on developing and testing new concepts for the in-service training of VET teachers through to 2004. These concepts are focused on the second stage, where new forms of co-operation, new learning cultures and the training of non-pedagogically educated engineers are tested. Another emphasis lies on in-service training, especially the third stage for newcomers starting the teaching profession in VET schools. Aspects like team-teaching, computer-aided development of curricula and lessons or further training for new tasks in transforming VET schools are also approved.

5.2 Teacher Practice

5.2.1 New curricular framework (‘Lernfeld’)

In 1996, the Standing Conference of Ministries of Education and Cultural Affairs implemented a new curricular framework for VET schools in Germany; so called ‘Lernfelder’ (KMK, 1996; 2000). Lernfelder are pedagogically reflected occupational fields, which should be both competence-based and work-related. This new curriculum framework had a great influence on VET practice. The key purpose of Lernfelder is to link curricula and, ultimately, learning processes to work activity and simultaneously to promote action-based learning. Action learning in VET schools has to be holistic, situated, contextualized and should foster practical experience. The new reference points for designing learning arrangements are the work processes, including self-directed planning, execution and evaluation of action while also taking interdisciplinary aspects (e.g. technology, economics, ecology, law, etc.) into account. The new curriculum framework leads to a paradigm shift in the tradition of curriculum structures. Instead of curricula with disciplinary structure and contents derived from the related discipline, the new Lernfeld curriculum is related to meaningful work processes and tasks. According to this regulation, VET teacher professionals must have a profound knowledge of business and work processes and know how to transform this knowledge into teaching practice. Imparting active,

and not inert, knowledge depends on the situated and integrated theoretical and practical knowledge.

5.2.2 School development

Presently, German VET schools are in a process of transformation and of developing a new profile. The Commission of the Federation and the states for Educational Planning proposed the further development of VET schools centers of excellence in regional educational networks (BLK, 2001). VET schools should offer regionally balanced initial and continuing VET programs using all resources and strength. A basic feature of a center of excellence is the ability for permanent innovation and close co-operation with the regional economic system. Hence, VET schools would operate as a market-oriented provider of VET programs. However, this requires the development of a different legislation for VET schools, which would not be based on a restricted public system and a juvenile type of school. This transformation requires a new structure of the school organization and teaching staff, including new forms of employment status and regulation for the working schedule (Gerds, 1995) and also support from organizational and personal development.

The teaching staff then might be formed through academic vocational pedagogues for a VET subject, other docents with fixed-term contracts, and additional freelance teachers engaged on the basis of a flexible fee – as is common in most institutions of further education (Rauner, 2002, p. 99). Besides the core tasks of teaching, other non-pedagogical tasks will probably emerge which do not belong to the tasks of a public school at his point, (e.g. marketing, management, controlling, assessment, co-operation with network partners, labor survey, work analysis, curriculum development and implementation, etc.). These tasks in economy and service oriented centers of excellence require a specialized competence, which can only be managed by opening schools to other experts who are not necessarily pedagogically trained.

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Chapter 7

THE DEVELOPMENT AND PRESENT SITUATION OF VOCATIONAL AND TECHNICAL TEACHERS' PROFESSIONS IN JAPAN

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1. INTRODUCTION

In Japan, the expansion of the upper secondary and higher education has continued to such an extent that about 75 % of high school graduates, including those from secondary vocational high schools, move on to the post-secondary institutions, which rank first or second in the world today. Furthermore, because the training systems within businesses and industries have been well-established, vocational education, as well as other types of public vocational training, seem to have been viewed as relatively insignificant. Perhaps due to these situations, the system for researching vocational education has not been well developed in Japan, and there are few research programs focusing on the professions of vocational education and training⁴¹. This text aims to contribute to the development of research on vocational education, its administrative and institutional aspects in particular, from the perspective of comparative vocational education research. The analytical focus is on the historical development and present

⁴¹ Here is one of recent research reports, Yoshimi Tanaka: *Gijyutsu Shokugyô Kyôiku no Kyôin Yôsei ni okeru Daigaku no Yakuwari to Karikyuramu ni kansuru Hikakushi teki Kenkyû*. Research reports, Tôkyô 2002.

situation of the teaching professions in upper secondary vocational schools and the two well-known post-secondary vocational schools—specialized schools and colleges for the development of vocational competencies.

Vocational education in the upper secondary schools in Japan includes vocational courses for senior high schools, such as technical (enrolling 8.8% of all high school students), commercial (8.1%), agricultural (2.8%), homemaking (1.7%), nursing (0.4%), and fishery (0.3%). The total enrollment represents approximately 22% of 3.921 million high school students pursuing a variety of vocational education specialties.

On the other hand, vocational education in post-secondary or junior colleges has a rather complicated system. First, there are special and general curricula for specialized schools under the administration of the Ministry of Education. About 27.1% of 1,315 million high school graduates enter these schools. Second, colleges of technology with five year courses, (i.e. equivalent of a 3-year high school education and that of a two-year junior college education), enroll about 0.8% or 11,000 of junior high school graduates. Third, the schools for development of vocational competencies that provide vocational training (“shokugyô kunren”) include universities, junior colleges and prefecture post-secondary schools. These schools are administered by the Ministry of Labor and enroll approximately 0.7% or 9,900 high school graduates.

“Technical education” (“gijyutsu kyôiku”) in Japan usually refers, in a narrow sense, to the technical component of the “technical skills and homemaking education,” a compulsory subject area in junior high school. Historically, that is, prior to 1958, technical education was an element of vocational education, but later it was reorganized into general education, which focuses on the aspect of formal education much more than Technik or Polytechnik of *Arbeitslehre* in the Federal Republic of Germany. The teaching profession of technical education, placed under a totally different system and serving different purposes from those of vocational education in upper secondary and post-secondary school is, therefore, not considered for inclusion in this thesis.

It may be mentioned here that the notion of vocational education or practical education (“jitsugyô kyôiku”), as used to refer to vocational education before World War II, includes fields of agriculture, industry and commerce.

2. DEVELOPMENT OF TEACHING PROFESSIONS FOR VOCATIONAL EDUCATION IN HIGH SCHOOLS

2.1 Origin of professions for vocational and technical education and training

This section mainly describes the establishment and development of the professions for high school vocational education. It is not easy, however, to identify the predecessor of vocational education as practiced in the post-war Japanese comprehensive high school. The reason is that the modern Japanese society, which commenced with the Meiji Restoration of 1867 or the breakdown of the old Edo Feudal Regime (1903-1867), witnessed two completely different education systems before and after World War II. The system before the war had separate tracks for general and vocational education with a consecutive secondary school system; for example, 3 – 5 year jitsugyô (practical skills) schools, and jitsugyô supplemental schools that provided vocational (industrial, agricultural and commercial) education. Post-war secondary schools adopted the American style single-track system. This system consists of a 3-year compulsory junior high school and a 3-year voluntary comprehensive senior high school, which were organized by integrating general and vocational education components.

Therefore, it is safe to say that post-war high school vocational education has the old jitsugyô school as its predecessor. The system for teaching professions for vocational educators was created together with enactment of the laws governing teacher training for jitsugyô education: Regulation for the Training of Technical Teachers (1894) and Regulation for Teacher Training of Jitsugyô Schools (industrial, agricultural and commercial) (1899).

According to the regulation of 1899, there were two ways of training teachers for jitsugyô education. First, the Meiji Government provided scholarship awards to those attending the final year of training at one of the professional higher education institutes: Tôkyô Agricultural College, Tôkyô Business College, and Tôkyô College of Technology. The recipients were required to take classes in pedagogy and didactics and enter the teaching profession at a jitsugyô school after their graduation. The second option was to establish teacher preparation courses within each of the professional

higher education institutes and train its own teachers at their respective training centers of agriculture, business, or industrial technology⁴².

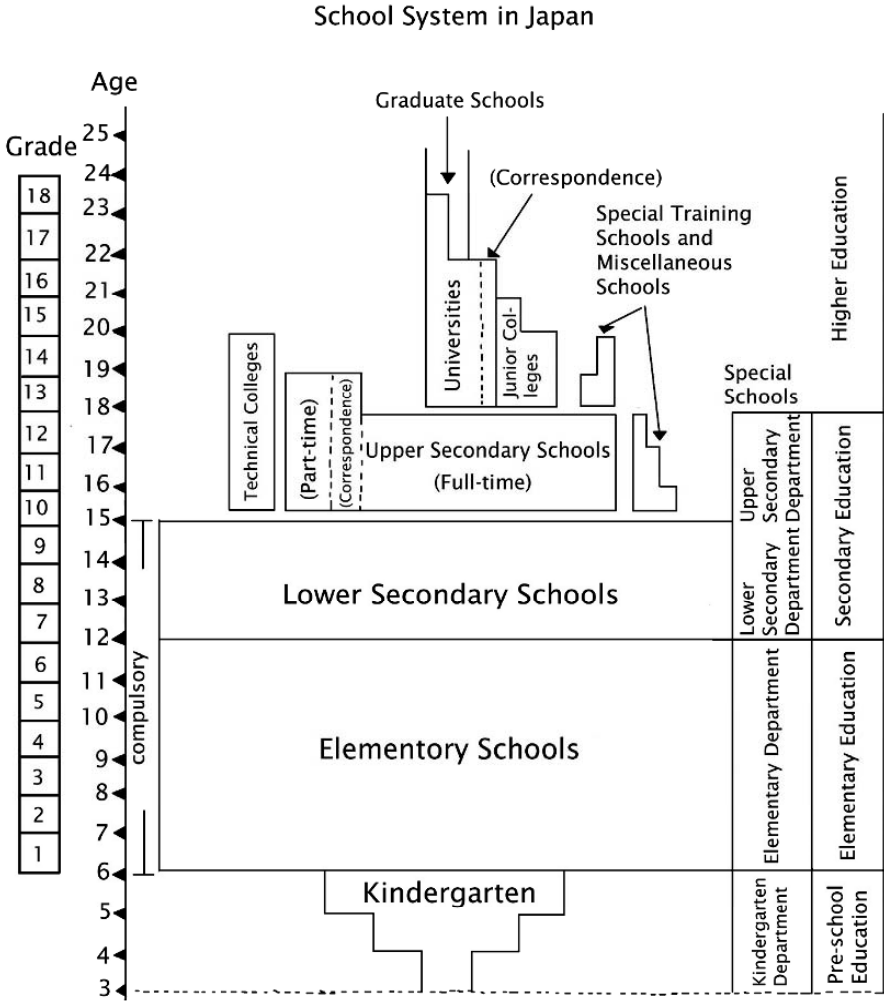


Figure 7-1. Japanese school system

Upon closer examination, the early Japanese vocational (jitsugyo) education system for agriculture and commerce was largely influenced by

⁴² Tarô Nakajima: *Kyôin Yôsei no Kenkyû*. Tôkyô, 1961, p.148.

American scientists and their education system. Similarly, Japan adopted the British, German and French models for developing industrial and technical education. It is interesting to note a particularly strong German influence on the development of industrial education, which had been well established before other fields.

For example, the Manufacturing Training Centre of Tokyô Kaisei School (1874-1877) and Tokyô Shokkô (=craftsman) School (1881-1890) were founded based on the plans for these schools, proposed by Gottfried Wagner, a German industrial chemist, who was at that time a "foreign professional employee" of the Meiji Government (1867-1912). The Tokyô Shokkô (=Craftsman) School aimed to refer principally to the German Gewerbeschule, to "be a model for Shokkô schools across the nation," and "train its teachers nationwide"⁴³. These aims echo the relationship between the Gewerbeschule, founded in Berlin by the Prussian Monarchy (1821) and the Provinz- Gewerbeschulen founded afterwards in local cities⁴⁴.

It is important to observe that only twenty to thirty vocational education teachers were trained annually by the teacher preparation centers of the professional higher education institutes while there was a much larger number of teachers trained outside of this official track, which had an annual output exceeding several hundreds⁴⁵. Those who took some additional education courses pertaining to the teaching profession within the regular university setting or those university graduates who passed through the special approval system without any written test became teachers in much larger numbers. The Education Act of 1907 made the latter case possible by allowing non-certified graduates to become teachers much more easily. In short, it can be concluded that vocational teacher training and its profession were only recognized as an appendix to regular academic education, although they had been established by the enactment of laws.

2.2 Postwar professions for vocational and technical education and training

In 1947, the new school law, modeled after the American system and the four-year university system, were formed. The university system included general education (1-2 years) and specialized faculty education (2-3 years) (see figure 7-1). The system for the teaching profession was also reformed. In the new

⁴³ Tôkyô Kôgyô Daigaku: Tôkyô Kôgyô Daigaku Kûjyûnen-Shi. Tôkyô, 1975, p.45.

⁴⁴ Christiane Schiersmann : Zur Sozialgeschichte der preussischen Provinz- Gewerbeschulen im 19. Jahrhundert. Weinheim, Basel, 1979, p.49.

⁴⁵ Nakajima : p.16

system, founded by the License Law for Teaching Personnel of 1949, elementary school teacher candidates have to be trained at the only teacher training university in each prefecture. Junior and senior high school teacher candidates must take both courses for specialization (i.e., major/ minor) and for teacher training at regular 4-year universities. In both cases, the candidates must receive a bachelor's degree and a teaching license before entering the teaching profession. The old teacher centers were abolished through this new law.

Professional certification for high school vocational education (i.e., agriculture, industry, commerce, fishery, and homemaking, etc.) was also re-issued by the relevant faculties approved by the Ministry of Education according to the new license law. The exception to the postwar reorganization was the training processes of industrial technical teachers. During the ten years following 1961, temporary 3-year training centers for industrial and technical teachers were created in nine national universities⁴⁶.

2.3 Activities for establishing organizations of professionals and professionalizing teaching careers

Organizations of vocational education professionals were not founded until very late, because of the rigid censorship against the establishment of political associations and social activist groups. Even today, their development as an autonomous entity is somewhat immature. This means two things: in Germany, for example, the German Association for Continuation Schools (= *Deutscher Verein für das Fortbildungsschulwesen*) was founded in 1892 as a nationwide specialists' organization aiming to achieve compulsory vocational continuation education (*die berufliche Fortbildung*). In Japan, a nationwide professional organization was first established after 1910, and it was an association of school principals under the direction of the Ministry of Education. Within the Ministry's guidelines, the association began its activities by seeking improvement of school facilities, working conditions of teachers, and of the system and contents of vocational education. For example, at the National Principals Conference of Jitsugyô Schools held in 1910, which opened with an address of instructions by the Minister of Education, an interest group consisting of teachers from technical schools and apprentice schools, made a variety of demands: articulation of industrial/ technical education with elementary schools,

⁴⁶ Hiroaki Satô : Hokkaidô Daigaku Kogyô Kyôin Yôsei-Sho no Seturitsu to Tenkai (unpublished).

making laboratory work compulsory for junior courses, sending teachers overseas, setting aside special allowances different from those for general education teachers, holding seminars for teachers, enacting laws to create Jitsugyô school for girls, and expansion of the post-1894 National Subsidy System for Jitsugyô Education⁴⁷.

After World War II, especially after 1947, each association of principals resumed their activities. For example, the National Association of Principals of Technical High Schools became active "for the purposes of developing research on technical education, mutual training among members, and promotion and expansion of technical education." Among their prominent achievements were the special subsidy system to enhance facilities for vocational education (1951), a special allowance system for teachers of vocational education (1957), and an increase of vocational high schools during the 1960s and 70s⁴⁸. Thus, these associations contributed to the development of distinctive features of vocational education administration in Japan.

Except for the associations of vocational school principals in their respective fields of agriculture, industry and commerce, there were few other noteworthy professional groups. Ordinary teachers belonged to specialized sectional groups within the Japan Trade Union for Teachers (Nikkyôso), or to its voluntary study groups. The former has organized, starting in 1973, an interest group for "Technology and Vocational Education" at a nationwide seminar assembly, and has engaged in activities to reform contents of education, and improve vocational education in general. Voluntary study groups for vocational teachers include: The Japanese Society for Research on Technology Education (in existence since 1960, with about 400 members consisting of junior high school and senior high school teachers of technology), The Japanese Society of Industrial (Sangyô) Education (since 1949), Japanese Society of Study on Commercial Education (since 1968, about 300 members), National Society of Study on Agricultural Education (since 1974), etc. The latter three societies seem to have attracted more vocational teachers than the former two.

In addition to these organizations of principals and those of the voluntary study groups, there are a few intermediate organizations that have been formed in recent years: The Japanese Society of Technical and Industrial Education (1993, about 560 members), The Japanese Society of Commercial Education (1988, about 780 members), and The Japanese Society of Agricultural Education (about 170 members). These have been organized by

⁴⁷ Kazuya Kobayashi : *Shiryô Nihon Kôgyô Kyôiku-Shi. Tôkyô* 2001, pp.578-579.

⁴⁸ *Ibid.* pp.291-293.

enthusiastic principal and teacher subgroups that have actively engaged in research activities. In summary, the principals associations have assumed a role of solidifying administrative and financial gains such as the improvement of vocational education system and status of teachers, while the trade union of teachers, its sectional interest groups and research groups in particular, have played a role for improving teaching conditions and contents of training education.

3. EMPLOYMENT, JOB RESPONSIBILITIES, PROFESSIONAL PROFILES AND QUALIFICATIONS IN VOCATIONAL AND TECHNICAL EDUCATION

3.1 Instructors for educational training within businesses and industries

Education and training in businesses and industries have not been regulated by any specific law since the early stage of industrialization. This has become paradoxically a motivation for Japanese companies to develop a unique system internationally⁴⁹. It is a sort of combined system of sustained job training, i.e., “O J T,” which is maintained by frequent labor rotation and transfer of personnel, and management training and development of supervisors or new candidates, i.e., “Off J T” Except for a very small part pertaining to legal profession competencies training, this system represents a strategy to develop human resources rather than training to enhance one’s vocational qualifications as seen in European contexts. The work of those who are in charge of human resource development is not specialized within a particular corporate system, including the work of “specialists” in the Off J T within a few big industries. A person in charge is someone’s boss, and even a person in charge of education is only a temporarily specialist within a company and moves on to another section by job transfer after several years, just like others throughout the organization.

⁴⁹ Walter Georg, 1993.

3.2 Professors in colleges of technology

Colleges of technology were originally formed in 1962 as a training school for middle level technicians, and as a destination school, receiving graduates from secondary vocational schools and junior colleges. However, the number of such schools amounts to only 62 in the entire country, and most of them are nationally operated (54 national, and 3 private). Although this segment represents a small part of institutions dedicated to vocational education, the labor force it has provided has been highly regarded by industries.

The total number of instructors at colleges of technology is 4,465 in 2002, and about 130 to 140 of them teach at each school. In the case of a "U" school, 23 instructors out of 141 are assigned to teach general courses of study in 2002. For "N" schools, 24 out of 136 in 2001, and for "T" schools 21 out of 130 in 2001. One sixth of all teachers thus teach general courses of education, while the other five sixth are charged with teaching of technical, vocational and professional courses.

Regardless of their assignments, the teaching staff usually possesses a masters' or doctor's degree, predominantly a Ph.D. Their academic preparation is almost equivalent to that of university professors. They are active within their specialized academic societies, but belong to one common academy, "The Japanese Association for Colleges of Technology."

Other criteria considered for employment of professors in each field include age (usually be younger than other existing members), achievements in research, and teaching experience. Informal factors, such as personality and "gakubatsu" (i.e., preference for the graduates of the same university from which existing staff members also graduated) are sometimes given priorities in employment.

3.3 Instructors of vocational competencies development schools and colleges

There are a small number of vocational competencies development institutions that function as vocational higher education institutions within the framework of the "Japanese Organization of Employment and Vocational Competencies Development" which is regulated by the Ministry of Labor. At its apex is one central "Polytechnic University" for the research and training of instructors through its four-year course of study. The following are ten colleges, hierarchically ordered, which offer 2-year course of study, one junior college with 2 year programs, sixty vocational development and promotion centers for adults and the unemployed, and several technical schools established in each of the 47 prefectures.

Though the number of instructors and their background information within all of these vocational competencies development schools are not available to the public, a total of 4,700 instructors in 2000 were engaged in training, according to the seventy two large and small universities and centers that are operated nationally. The Japanese term “Daigakkô” is translated into English as “Polytechnic University (College)”, but the Japanese character, “kou” literally means “school”, not “university”.

The instructors at these vocational schools have been trained almost exclusively by the central Polytechnic University established in 1961. It produced 67 graduates in 1964, 212 in 1999, and a total of 5,433 since its opening. Of those, 2,065 (38% of all graduates) have been employed as local instructors, and 2,545 (47%) have been employed in private companies⁵⁰. To sum up, it is known that most instructors of institutions aiming at developing vocational competencies are not from the central polytechnic university, but that significant manpower has been supplied by those who have taken teacher training courses at advanced technical schools of general universities or master’s degree courses at graduate schools. As for qualifications for employment, the Polytechnic University requires a doctor’s degree, local universities require a master’s degree, and others require a teaching certificate as well as the nationally licensed skilled worker permit with a grade one level, or, finally, a teaching license is required for technical high schools.

3.4 Teachers in specialized schools

According to an unpublished statistic by the Ministry of Education, the total number of teachers in specialized schools was 39,000 in 2002. Of the 3,467, 3,152 (91%) of the schools are private. These schools are set up to offer courses in medical, cultural, personal refinement, technical/ engineering, and health fields. The average number of full-time teachers per school is 11.2. Three times more part-time teachers (a total of 109,000) also lend support to the system.

Their demographic attributes are shown in the “Statistical Research Concerning Teachers in School: Interim Report” published by the Ministry of Education in September 2002. It indicates that the abstracted number of these schoolteachers is about 38,000 (26% of abstraction rate), in which the number of male is almost as many as females (48.6 to 51.4). The main age group for teachers is 35–40 years old; the average age of the total group is

⁵⁰ Shokugyô Nôryoku Kaihatsu Daigakkô : Shokugyô Nôryoku Kaihatsu Daigakkô Yonjyû-Nen-Shi. Sagamihara 2001, p.129.

44.9 years old. The predominant group is, on the average, younger than university professors.

Article 15 of the Regulation for Founding of Specialized Schools governs the instructor qualifications for the school. It recognizes those who have completed specialized courses at this school (i.e. equivalent to colleges) and who possess more than six years of education or research related work experience. For this reason many of their teachers themselves have come from these schools. As part of their educational backgrounds, 37.1% of teachers received training at the specialized school, while 33.6 % teachers are from four-year universities, 4.3% from masters' degree programs at graduate school, and only 2.9% from doctoral programs.

Table 7-1. Educational background of teachers in specialized schools

Total	Graduate course		Uni. Dr.	Uni. Ma.	Uni. Before WW	Uni. in foreign country	College	Special school	Misc. school	
	2.9	4.3								
Total	38,144	100	2.9	4.3	33.6	0.9	1.1	9.2	37.1	3.8
Male	18,554	100	5.7	6.5	47.4	1.6	1.5	3.7	24.8	1.2
Female	19,590	100	0.3	2.3	20.5	0.1	0.7	14.5	48.6	6.3

Abstracted statistic in 2001 by Ministry of education

3.5 Teachers in vocational high schools

According to the same 2002 teacher statistics, the total number of all teachers in vocational high schools is 255,758. But items categorized by attributes are not available to the public except for:

- age: the average age of 43.8 years old,
- sex: 25.2% are women,
- and position: 89.8% are general subject teachers.

The percentage of teachers for each special subject is included in the statistics: agriculture 1.5%, technical industry 5.8%, and commerce 4.8%. These figures, however, seem to lack credibility because they are based on different rates of abstraction by each prefecture (varied from 1/1 to 1/19) as well as on tabulating multiple-choice responses.

On the other hand, a variety of demographic data, including the total number of teacher attributes, were investigated and the results were made public by the Prefecture Boards of Education and the National Principals Association of Vocational High Schools. Also, the "Research on Securing of Technical Teachers" conducted periodically since 1989 by the National

Principals Association of Technical High Schools provides a good deal of credible data. The number of technical teachers is 13,831 in 583 schools (in 2001, 89% response rate), while 13,476 in 501 schools (in 1994, 92% response rate see figure 7-2). By age group, 2,425 teachers were in the 36-40 year old group, and 2,296 were between 55-60, which indicates an aging trend.

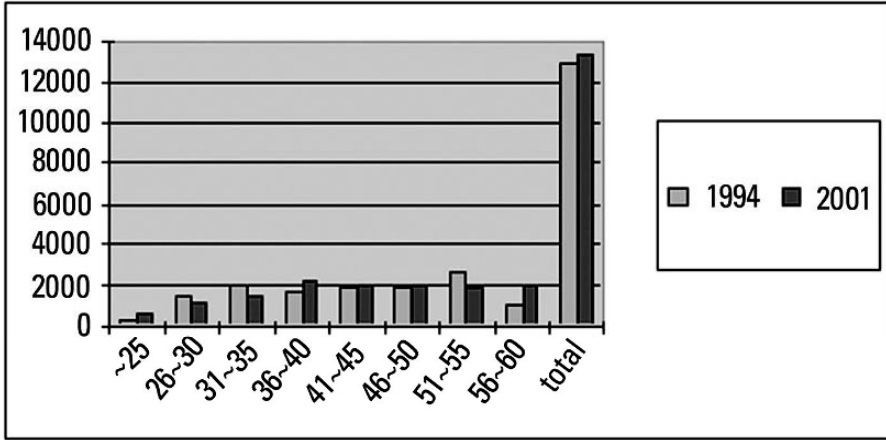


Figure 7-2. The number of technical teachers by age group
Source: Zenkô Siryhô 13-11, 2001 p.17

There are basically two ways of securing a position as a vocational education teacher in a high school. One is to acquire a teaching license for each specialty from a university and pass the examination administered by each prefecture before qualifying for a teaching position. In the case of private schools, this examination is administered by each school. The other way is to have experience mainly as a laboratory assistant (most of these candidates graduated from a high school where they currently work), or as a part-time lecturer, before obtaining a teaching permit (see table 7-2). In the former case, some people first worked at a private company and later moved on to teaching a profession. In 2000, there were only 173 candidates nationally, who were appointed as new teachers at technical schools. Their background information is shown in table 7-1.

The number of laboratory assistants is said to be about fourteen. As in the case of the temporary training institutes for technical teachers mentioned earlier, these assistants could become laboratory teachers of vocational

subjects because of the 1961 revision of the law governing teacher licenses⁵¹. A minimum of two assistants are hired for each subject of fishery, agriculture and technical/ industrial sections. For commerce, one assistant per 675 students is the norm. The number of assistants could be increased depending on student enrollment⁵².

Table 7-2. Career before employment as technical teacher

Career	Uni	Assistant	Lecture	Company	Others	Total
Courses						
Mecha	8	13	16	5	10	52
Electric	10	11	29	9	9	68
Architect		3	7	4	2	16
Civil eng.	3	1	6	1	3	14
Chemical	1		1	1	1	4
Fiber			1	1		2
Interior		1				1
Design	1		1	1		3
Others		2	2	2	7	13
Total	23	31	63	24	32	173

Source: Zenkô Siryô 12-11, 2001, p.13.

4. TRAINING OF TEACHERS FOR VOCATIONAL AND TECHNICAL EDUCATION

As mentioned above, in the field of secondary or post-secondary vocational education, only the high school vocational programs and the vocational competencies development schools have clearly articulated their teacher-training systems.

⁵¹ Regarding the history of laboratory assistant system, see Susumu Sasaki: Kôtô Gakkô Shokugyô Gakka ni okeru Jisshû Jyoshu Seido no Rekisi. In. Aichi Daigaku: Kekiyû Ronshû. No. 24. Toyohashi 2001, pp.40-4212 Fumito Satô: Kôtô Gakkô ni okeru Jisshû Jyoshu Seido no Hensen. In. Tanaka op cit. pp. 131-133.

⁵² See papers by Yôko Kimiwada. For instance, Yôko Kimiwada: Daigaku Kôgaku-Bu ni okeru Kôtô Gakkô Kôgyô-Ka Kyôin no Yôsei. In. Tottori Daigaku Kyôikugaku-Bu: Kekiyû Nenpô. No. 1. Tottori, 1992.

4.1 Training processes for teachers of agriculture, industrial technology and commerce in vocational high schools

There are three types of licenses for a teacher of high school vocational education. The first is the general license governed by Article 15 of the Teacher License Law; it is granted to those who have completed the training courses at a university faculty approved by the Ministry of Education. The second is the special license governed by Article 6, which is granted after passing a simple examination for teachers. This examination is different in each prefecture. The third is the temporary and short-term license, which does not require special training or completing of compulsory subjects. The norm for most teacher candidates is the general license.

There are two levels of general licenses: the advanced license, equivalent to a Masters Degree and the ordinary license, equivalent to a Bachelors Degree. Recently, the advanced license has been tacitly recommended as a qualification necessary to become a school administrator. When the master's degree courses are completed, it is automatically given to those who have already acquired an ordinary license. Therefore, the ordinary license is considered more basic and more important as an educational benchmark in one's career in vocational education.

The requirements for an ordinary license are basically not so different from those of other licenses for high school teachers. Students are required to complete their studies within four years:

1. 20 credits or more in courses of each special teaching subject; completion of specialized subjects at another faculty are automatically counted towards the license.
2. 23 credits or more among courses on teaching profession, and
3. 16 credits or more in courses relevant to the teaching subject or teaching profession; the latter can substitute the former.

Students can thus obtain the teacher license when they have earned the required number of credits in specialized subjects, which is also necessary for receiving a Bachelor's Degree. Normally students choose about 80 credits from the courses that are registered as teacher training courses with the Ministry of Education; however, a total of 124 credits or more, which include liberal arts education credits, are required for graduation. In addition, included in this total are 23-course credits on the teaching profession, and more than one required credit in vocational orientation in their specific discipline (i.e., the equivalent of 2 credits at most universities or 15 90-minute lectures per semester).

The vocational education license is further categorized into 19 specialty fields: home economics, agriculture, technical/ industrial, commerce, fishery, mercantile marine, nursing, welfare, information, practical laboratory subjects for each theoretical subject, and vocational orientation. The courses necessary for acquiring a license for each of these areas are offered by the respective faculties of agriculture, technology (engineering), economics, information technology, social welfare and so on.

What seems to be an issue are the 23 course credits pertaining to the teaching profession, namely educational sciences and/ or psychological sciences. The breakdown of these courses are as follows: 2 credits in "significance of teaching profession" (i.e., contents of teacher responsibilities and tasks), 6 credits of "basic theories in the teaching profession" (i.e., history, thought, systems, development, etc.), 6 credits of curriculum and pedagogy (i.e., curriculum development, methods of teaching/ instructing in each subject, morals, educational technology, etc.), 4 credits of "student guidance, educational counseling, and career orientation," 2 credits of integrated seminars, and 3 credits of practicum (internship). Almost all of these courses are taught by professors of general pedagogy from the faculty of education or from other relevant faculties; many of them are part-time lecturers.

Compared with the German teacher training courses for vocational or specialized schools with respect to curriculum structure, there are several interesting points.

1. Though varied, most education courses focus on general pedagogy, and the role of didactics unique to commerce, agriculture, or industrial/ technical subjects is conspicuously small (4 credits).
2. Special didactic courses, if offered, are taught mainly by part-time lecturers in most of the several hundred universities/ faculties in Japan.
3. The teaching practicum is only 3 credits and is a very short-term course. In addition, this course is taken during the final year of the program for two to three weeks either before or after the teacher employment examination in July.
4. Since the revision of the 1961 Teacher License Law (supplementary provision, clause 13), candidates for industrial and technical teacher positions may substitute some or all of their industrial/ technical teacher training courses with other courses 'for the time being'.
5. There still remains a significant case of exception, namely, a laboratory assistant with more than six years of experience and who has successfully completed more than ten credits of teacher training courses from regular university classes, can be promoted (i.e., certified) to become a laboratory teacher. Furthermore, these 10 credits can come from

attending “certified lectures” organized by the local Board of Education during the summer vacation. Lecturers are usually university professors.

The point is that the temporary measures taken during the period of industrialization forty years ago have still persisted. These factors seem to have a great deal to do with weaknesses in the vocational teacher training system and research on vocational education in Japan. That is a dark side of Japanese vocational teacher training.

4.2 Instructor training processes at vocational competencies development universities (Polytechnic Universities)

On the other hand, training of industrial technicians and skilled workers at the vocational competencies development school and university is progressive, though small in scale. Following the Vocational Training Law of 1958, the Central Vocational Training Center was established in 1961 and began training instructors of vocational education under Ministry of Labor regulations. The center’s name was changed several times: Vocational Training College in 1965, Vocational Competencies Development University in 1993, and Polytechnic University in 1999. The University is prescribed to “train instructors of vocational training” in Japan, under article 27 of the Vocational Competencies Development and Promotion Law, the new name after the revision in 1985. The university offers eight 4-year programs such as industrial engineering, electrical technology, electronics, architectural engineering, technology for social welfare, etc. Student enrollment is fixed at 220, which is rather low, but the university provides solid instructor training programs. In accordance with the standards set by the Ministry of Labor, a student has to complete 51 credits of general courses, a total of 100 credits in a specialized field (40 credits in laboratory practice and 60 in specialized theoretical courses), and 23 compulsory credits of “competencies development subjects (i.e., subjects of training sciences, table 7-3)” which are also required in order to obtain a license as an instructor. These numbers of credits are almost identical to those required by vocational teacher training programs at universities under the Ministry of Education. (Also identical is the length of instructional time per single credit)

However, the Polytechnic University’s instructor training curriculum includes more specialized contents, focusing on vocations and training, which are comparable to the teacher training courses of vocational schools in Germany. This is quite in contrast with the teacher training programs under the Ministry of Education, which focus more on general educational sciences and psychological sciences. Though there is only one Polytechnic University

in Japan, it employs six specialists of science of vocational training who are responsible for teaching these courses.

Table 7-3. Subjects of training science at polytechnic university

Subjects	Credit Lec.—Semi.—Labo.	Compulsory/ Optional	Uni.year
Basic Lecture on Education and Training	2—0—0	Com.	1
Psychology of Education and Training	2—0—0	Com.	1
Lecture on Guidance	2—0—0	Com.	2
Lecture on Lifelong Vocational Development	2—0—0	Com.	2
Curriculum of Education and Training	2—0—0	Com.	2
Vocational Science	2—0—0	Com.	3
Special Didactics	2—0—0	Com.	3
Teaching Technology	0—1—0	Com.	3
Teaching Practice	0—0—4	Com	4
Law of Education and Training	2—0—0	Com./ Opt.	3
Planning of Education and Training	2—0—0		3
Lecture on Education and Training in Firm	2—0—0	Opt.	2 • 3 • 4
Educational and Training Thought	2—0—0	Opt.	2 • 3 • 4
Lecture on Technology and Skill	2—0—0	Opt.	2 • 3 • 4
Comparative Vocational Training	2—0—0	Opt.	2 • 3 • 4

Source: In. Notes 10, p.243.

5. THE REALITY OF EDUCATIONAL PRACTICE AND PROFESSIONALISM: THE REALITY OF LABOR AND POST-TRAINING TEACHER INDUCTION PROCESSES

Here, an attempt will be made to describe the reality regarding the issue of specialization after appointment as a vocational teacher in a high school.

5.1 Entrance to the profession and the first year of training

Those who have obtained the teaching license, most of them between 35-39 years old take the first series of examinations in general knowledge, specialty subjects, practice, group interview, and the second series, which includes aptitude, essay, and a personal interview. These examinations are given at about the same time nationally and the first examination is given between the middle and the last week of July. The second follows about one month later. As table 7-4 shows, it is very difficult to pass these examinations, because of a flood of applicants competing for a limited number of positions. Many applicants begin preparing for the examinations in the autumn one year prior to the testing time, usually with more concentration than on classes at university. Those who have passed the second series may not necessarily be appointed to a teaching position. It is because the principal's discretion, to some extent, affects the appointment of a teacher. The declining student enrollment in vocational programs seems to have fueled the competition.

Table 7-4. Teacher selection examination results of Aichi Prefecture (2002)

Subjects	①Applicants	First acceptance	②Second acceptance	①/②
Japanese	174	18	9	19.3
Ethic/ Politics and Economics	121	5	1	121.0
Geography/ History	237	14	6	39.5
Mathematics	170	40	21	8.1
Science	163	28	14	11.6
Music	42	5	1	42.0
Art	33	5	1	33.0
Home economics	114	11	5	22.8
Health/ Sport	308	63	35	8.8
English	197	36	18	7.2
Agriculture	34	7	2	17.0
Technical industry	92	16	6	15.3
Commerce	94	26	13	7.2
Total	1779	274	132	13.5

Source: Board of Education, Prefecture Aichi. 2002

Once an applicant has been appointed as a teacher, s/he is required to undertake in-service training during the first year. The length of practicum for student teachers in Japan is, as stated earlier, quite short, and there is no system of apprentice teacher; like in the “*Referendar*” in Germany. These

drawbacks had been long recognized, but the problems were not eased until 1988. Since then, new teachers have been exempted from serving as classroom advisor (i.e., homeroom responsibility) in order for them to participate in seminars outside or within the school. Each of them has also been assigned with a mentor teacher selected from a pool of experienced teachers.

5.2 Conflict over the issue of “desirable knowledge and skill”

There have been, for a long time, two distinct camps among high school vocational teachers: those teachers who have not gone through vocational education as students and those who have. The former group has strength in theoretical and basic specialized subjects while the latter's strength is in practical and more advanced specialized subjects.⁵³ Table 7-5 (p. 178) shows the responses of principals of technical high schools to the question, “what type of teachers do you desire?” Based on their responses, there are two distinct groups; one is the group that gives importance to rich basic knowledge about their specialty, and the other is more enthusiastic about practical instruction.

5.3 Wage system

As mentioned previously, vocational education in Japan has frequently been referred as a “market model” (i.e., oriented to the training within a company) by internationalists and as a result, perhaps, the role of school-based vocational education has not received much attention. This is also because we, Japanese researchers of vocational education, have not been very active internationally. As indicated earlier in this article, high school vocational education has supported the postwar industrialization of Japan by supplying “middle level technicians”. The need for skilled workers was met by training junior high school graduates within the industries. By looking at the salary schedule of high school vocational teachers, it is quite clear that Japanese businesses and industries as well as the education administration have considered school vocational programs very important for training lower level technicians.

⁵³ See the paper by K. Itô as one of case studies. Kazuo Itô: *Gijyutsu-Sha Yôsei tosite-no Kôgyô Kôkô; Kôgyô Kyôin no Career*. In. *Butsudai Shakaigaku*. No. 12. Kyôto, 1987.

The base wage of high school teachers in Japan is annually determined by the National Personnel Authority through its publication of the “Salary Table for Teaching Staff—Category II.” Each prefecture and private school follows these guidelines to determine their respective teacher salaries. This practice is to ensure wage parity, since Japanese public servants, including teachers, do not have the right to strike in order to negotiate higher wages. The Salary Table consists of grade 1 (assistant and semi-teacher), grade 2 (general teacher), grade 3 (head-teacher) and grade 4 (principal). Each grade is further classified according to years of experience and the wage increases with added experience. A slightly higher rate of wage increase is usually added to this base salary in some prefectures or cities.

Table 7-5. Responses of technical school principals to “What type of teachers do you desire?”

Region	Hokkaido Tohoku	Kanto	Hoku- Shinesu	Tokai	Kinki	Chugoku	Shikoku	Kyushu	National
A	48* 39.0	55 38.7	27 35.1	39 40.6	35 36.5	25 31.3	10 32.3	41 36.9	280 37.0
B	50 38.7	68 47.9	37 48.1	36 37.5	48 50.0	38 47.5	17 54.8	50 45.0	344 45.5
C	14 11.4	10 7.0	9 11.7	10 10.4	8 8.3	11 13.8	2 6.5	11 9.9	75 9.9
D	8 6.5	6 4.2	4 5.2	8 8.3	3 3.1	5 6.3	1 3.2	8 7.2	43 5.7
E	3 2.4	3 2.1	0 0	3 3.1	2 2.1	1 1.3	1 3.2	1 0.9	14 1.9
A	Teacher who has taken courses in basic special knowledge and skill, and rich general knowledge.								
B	Teacher who has a high motivation toward vocational education and a lot of educational ability.								
C	Teacher who is skillful at letting students find feelings of satisfaction through school events.								
D	Specialist-oriented teacher who has worked in a private company.								
E	Others (description)								

*Over stair is number, under is %.

Source: Zenkō Shiryō 12-11. 2000, p. 6

The salary of vocational education teachers is from 6% (evening high school) to 10% higher because more than half of their working time is spent on the instruction of specialized subject; this extra amount is referred to as the industrial education allowance. This special measure implemented since 1957 was to secure “teachers of exceptional quality” and this benefit was applied to laboratory assistants as well. Because this measure has excluded

teachers of general subjects within the same vocational high school, it has created a conflict among the teaching staff of vocational high schools.

5.4 Participation in curriculum development

Teacher participation in developing curriculum for vocational courses is, in general, quite negligent (see figure 7-3). It is mainly because all of the “Curriculum Guidelines” (*Gakushū Shidō Yōryō*) and school textbooks are developed and drafted by a committee of scholars and a delegation of teachers with administrative duties, under the instruction of the textbook inspector and the subject inspector of the Ministry of Education. Thus, strong centralization has been the norm in curriculum development. However, the Ministry of Education directs teachers to hold “bureaucratic” seminars at least once a year in each prefecture or region (a group of neighboring prefectures). In these seminars, exemplary educational practices of local schools are presented and later incorporated into relevant curriculum areas developed by the central government.

With regard to textbooks, some Japanese textbook companies do not publish textbooks on subjects of vocational education, because the demand for these books is strikingly lower than that for general courses. Textbooks for laboratory learning, in particular, are not published at all; so they have to be produced, often by groups of volunteer teachers in prefectures or schools. These ardent teachers, therefore, take part in various seminars and engage in research activities on their own time in order to improve daily instruction at their own schools.

5.5 Exchange with local industries

We need to examine the connection between vocational school teachers and local industries considering two aspects. One concerns the contents of education and school management. In this regard, there has been almost no relationship between schoolteachers and industries or those in charge of education and training within companies. There are other concerns with recruitment and employment of graduates. Here, teachers have had a stronger relationship with local industries. Japanese teachers of vocational education, especially administrative staff or teachers in charge of employment/ career guidance, have developed a uniquely close relationship with industries, which is internationally recognized. Furthermore, most of the teachers at a vocational high school have participated in developing this relationship since they have been assigned to such a role at least once in their teaching career. This close relationship between the “sender and receiver” of the graduates has been developed over a long period of time, sometimes

covering a wide region. The 1947 Employment Stability Law has permitted (or rather promoted), since 1949, principals of junior and senior high schools to find and secure jobs for their graduates.

Officers of the Employment Stability Agency only approve a document detailing the companies' recruitment needs submitted to schools by signing it (i.e., stamping it with an official seal), but do not provide any special employment guidance nor help recruiting students for specific jobs. During every summer vacation, from July to August, vocational education teachers are very busy visiting companies, setting up interviews and helping students to find jobs.

6. REFORM PERSPECTIVES IN PROFESSIONS OF VOCATIONAL EDUCATION TRAINING

Finally, discussed below are some of my views on reforming teaching professions of vocational and technical education in Japan.

Regarding the main object of this paper, the teaching profession of high school vocational education seems to have remained the same since the post-war period when high school vocational education expanded rapidly by securing and keeping enough qualified vocational teachers. Being allowed to obtain a teacher permit without taking teacher-training courses is equivalent to having no system for teacher training. This antiquated system should be reformed in accordance with the systems established for other subject areas, which recognize the importance of specializations for secondary level teachers.

Teacher qualities required for vocational education have been changing with an increasing rate of high school vocational education graduates moving on to higher education (about 10 to 20% depending on the vocational courses). The role of vocational high schools can no longer focus only on preparing students for employment or vocational qualification tests. In order to develop the articulation between vocational education and academic higher education, strengthening the professional relationships between teachers of general subjects and vocational subjects within the same school would be necessary. These kinds of relationships encourage collaboration and cultivate teaching abilities of all teachers in teachings their own subject as well as others'.

It is interesting to point out that a considerable number of teachers without any actual experience in vocational education are increasing in recent years. At the same time, the abilities to teach one of the vocational education's *raison d'être*, practical skills, have also been noted as declining. Recognizing this situation, the Ministry of Education has been advocating

the appointment of engineers and other technical experts from the private sector in order to respond to the needs of new technology. However, this problem exists because teacher preparation programs in general, as well as specialized courses offered by universities have been theory-oriented at the expense of practical skill development. This bias needs to be urgently reformed.

“Internship” (meaning on-the-job practical experience) was introduced by the 1999 New Curriculum Guidelines as a compulsory subject in vocational education. This concept was never a component of curriculum for school vocational education in Japan prior to 1999. It urges teachers of vocational education to focus not only on enhancing students’ employment opportunities, but also on transforming their own work by examining instructional contents and methodology that are aligned with their specialization.

With regard to the teaching profession at specialized schools, the main institution of vocational education at the post-secondary level, the primary tasks should be to clarify its training system and to improve teachers’ education. In both 1998 and 1999, those who completed this school became eligible to transfer into the third year (i.e., fifth semester) of university, while those who have had additional experience were allowed to take the admissions examination for graduate school. Thus, it is critical that qualifications and competency level of teachers at specialized schools reach the same level as those of instructors of higher education. The association of specialized schools has recognized a critical need for the “establishment of a recurrent education and re-training system” since 1991⁵⁴. In recent years, some instructors of specialized schools have been seen among those pursuing a master’s degree or doctor’s degree at graduate schools.

Instructors at vocational competencies development institutions have a variety of job responsibilities. Almost all of these schools and centers not only provide the initial training of two or four year programs, but also plan and carry out professional development training and retraining (short term training programs of six months or one year), and even one or two week programs in recent months. Important work for them includes discerning training needs, making plans for training programs, and assisting in-company training, none of which are part of the work responsibilities of vocational education teachers.

⁵⁴ Senmon Gakkô Shinbun-Sha: Zenkoku Senmon Gakkô Nenkan 1998 Nendo- Ban. Tokyô 1999, p.353.

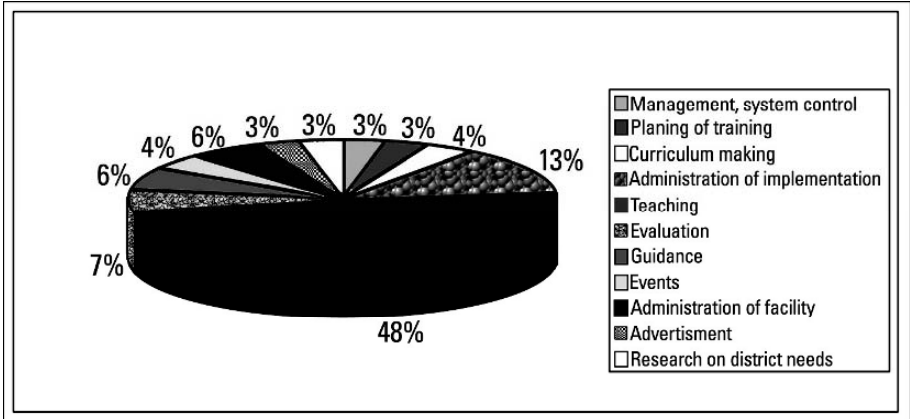


Figure 7-3. How an instructor’s workday is spent at prefecture vocational training schools
 Source: Notes 10, p.59

Ten years ago, the Central Vocational Competencies Development University conducted research on instructors’ work and made several proposals:

1. upgrading the level of instructors’ specialization (i.e., establishment of graduate school),
2. improvement of instructors’ qualifications and competencies to respond to the increasing number of vocational training needs for adults with careers (i.e., establishment of training programs for instructors, development and dissemination of Off J T instructing method as well as OJT method),
3. replacing the present licensing system, based on job categories, with one based on training need levels (i.e., college graduate, technician, the handicapped or disabled, worker with a job, overseas instructor, etc.)⁵⁵.

Of these, the first two proposals have already been implemented at the Central University.

In closing, two observations may be made regarding the professions of vocational and technical education in Japan. The first is a need for the reorganization of the training and qualification systems, especially for teachers of technical high school, specialized school and company trainers serving industries. The second is a need for greater collaboration among

⁵⁵ Shokugyō Nōryoku Kaihatsu Daigakkō: Shokugyō Kunren Shidō-In no Gyōmu ni kansuru Chōsa. in. Chōsa Kenkyū Hōkoku-Sho. No.72. Sagamihara 1994, pp.96-104.

instructors and researchers of specialty interest groups as well as for promoting more personnel exchanges among these professionals.

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Chapter 8

TECHNICAL AND VOCATIONAL EDUCATION AND ITS TEACHER TRAINING IN NORWAY

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1. NORWEGIAN SOCIETY – AN INTRODUCTION

The historical development of today's technical and vocational teaching profession in Norway reflects the development of the Norwegian social democratic post-war society as well as the development of TVET in the country.

Measured by the size of its population – 4,5 million people – Norway is a small country. Located in the periphery, in the north of Europe and crossing several latitude zones, with its 2850 km of coast line and its 1800 km of length, Norway has a population that lives scattered far apart from each other and often in remote areas. Large arms of the sea – the fjords – and high mountains have, for a long time, made communications by ground scarce and very expensive to develop and maintain, making it difficult to assure a good communication network. Difficulties in communication have contributed to making Norway politically decentralized and, undoubtedly, played a significant role regarding the strategies and policies chosen for the development of initial technical and vocational education and training as much as for education in general.

Norway is a young nation. Democratic values were fundamental at its beginning, the country having been under Denmark's rule for 400 years and then until 1905, almost a hundred years in union with Sweden. This situation strongly marked the policies of education and preparation of professionals in the country throughout its existence, and still affects it. The ideal of an egalitarian and just society based on the principle of equal access to

education independent of social or geographical origin has been at the heart of the Norwegian educational policies since the mid-1930s and is manifested through Norway's political parties' programs.

Because people live far apart from each other, and urbanization is concentrated mostly in the south of the country and around large cities, many municipalities in the 1950s could not offer their children more than 7 years of schooling. At the time the distances to the nearest *Realschulen* (lower secondary school) were large; pupils coming from the countryside could only go home during school holidays. Therefore, enthusiasm was high when the offer of compulsory education with a common curricular base was extended from 7 to 9 years in 1969 and taught in unified classes. In 1998, basic education was extended to 10 years by lowering the age for starting school from 7 to 6 years.

Industrialization in Norway is also rather young. In the 1840s, there were a few cotton mills, but this industry extended to only two or three towns. The paper industry began to develop during the last two decades of the nineteenth century (Mjelde, 1993, p.55). From 1890 to 1920 there was a marked increase in the number of factories (Bull, 1956, in Mjelde, 1993) and from 1900 to 1910 crafts declined and there was a strong increase in industrial employment. The number of workers in industrial factories exceeded the number of workers in crafts (Andersen, 1984, in Mjelde, 1993). The guild system with its apprenticeship system disintegrated, and the relationship between school and work, as well as vocational education, became important subjects of discussion.

Industrialization has also entailed uneven processes of development, and the labor processes have been transformed at a different rate within the field of work. Some crafts retained traditional forms of labor for long periods of time, while others have disappeared completely. In some small crafts, the master still works with journeymen and apprentices, where handwork is still more important than that of the machine. Industrialization and the factory system created new categories for factory workers who were familiar with specific work operations. New means of production demanded new methods of education of the labor force, and constituted the main factors for the development of vocational education, according to Mjelde (1993, p.58). She also argues that the interests of craft and industry have often been at odds and that the history of vocational training has been marked by business conflicts between industrialized production and craft production.

Today, Norwegian trade and industry is characterized by a high number of small and medium-sized companies, and a few large ones, which operate both at national and international levels. This composition of the system of companies in Norway, which is comprised of a high number of small companies, and fewer of average size, often located far away from each

other, may have contributed to creating a climate favorable to implementing training policies at a local level that supported initial vocational education and training within the school structure.

The high degree of social dialogue, which entails a broad system of negotiation at all levels of decisions, in private as well as in public organizations, is another important feature of Norwegian society that affects the educational system, its functioning and work life (Thorsrud, 1964, 1966). Changes take place in a consensus-oriented society with a very egalitarian educational policy (Tarrow, 1997, 1999). Thus, all reform processes have been carried out in collaboration between the social partners – employers and employees - and the State.

Since the end of 1960s, Norway has enjoyed a relatively high standard of living and its population remained quite homogeneous until the 1970s, when a wave of immigrants, coming mainly from developing countries started and gradually increased in the following decades. In the large cities in particular, and above all in the capital, there has been a large concentration of immigrants as compared to the rest of the country.

1.1 School laws – A public responsibility

The principles of equality and social justice have gradually been pursued and implemented in different ways and have provided the foundation for establishing compulsory education characterized by “unified” classes (Tarrow, 2001). Compulsory education was extended from 7 to 9 years in 1969, and to 10 years in 1998, by lowering the enrollment age to 6. Basic education comprises elementary and lower secondary school levels. During these 10 years, Norwegian pupils enjoyed an educational space free from formal differences compared to the situation in most other countries.

Most aims of Norwegian educational policies that exist today were attained through laws and regulations implemented by the end of the 1970s. In 1974, the traditional Gymnasium and the vocational schools were subject to one comprehensive law (Upper Secondary School Act of 1974). One of the fundamental aims of the new law was to give equal status to practical and theoretical education (Ministry of Church and Education, 1982, p.19). Another aim of this law was to give all young people equal opportunities, regardless of class background, geographical location and gender. The assumption was that equality through education would contribute to overcoming social differences and give working class children the opportunity to move into the middle class by means of their performances in the comprehensive schools. Research in Scandinavia as well as elsewhere in the Western World, has shown the complexities of these aims (Hernes and

Knudsen, 1976; Kokkersvoll and Mjelde, 1982; Mjelde, 1993; Tarrou, 1995; 1997; 1999).

In that decade, the concept of “equality” became more strongly valued as a principle guiding education and it was extended to “respect for inequality” (Telhaug, 1992). Translated into practice, this meant that students with special needs should not be segregated, but included in ordinary unified classes, as far as they were capable of following a school-based learning program. Thus, since the mid-1980s, in order to create conditions for greater integration, pupils with special needs have profited from the intervention of an additional teacher in the unified classes, when appropriate for them. Another example of additional teaching are the extra resources allocated to teach children of immigrant families in their own languages, in order to give them the same opportunity of following the Norwegian school programs as ethnic Norwegians. Also, this extra teaching allows pupils to continue learning their mother tongue until the end of basic schooling. These measures underline the importance that comprehensive schooling has had for leveling off inequalities in Norway. Thus one can say that young Norwegians enjoy a space that shelters them from formal differences from the time they start school up to the age they complete lower secondary school.

This space has been widened in the past 30 years. Starting with the educational reforms of the 1970s and 1980s, equality between pupils coming from various social layers, gender equality, equality between pupils having special pedagogical needs, and the equality between general and vocational education also gradually became constitutive values at the upper secondary school level, as stated in the Law for Secondary Education of 1974 . This law made it possible for young people to obtain an offer of three years for secondary schooling from 16 to 20 years old.

The curriculum in this upper secondary school system has, since the 1974 Reform, been characterized by plurality and unity, making this level quite different from the basic education covering primary and lower secondary school level, with a common curriculum. In the secondary school from 1974 onwards, nine out of ten sections were oriented towards technical or vocational education that provided training for skilled workers – partly in classes and partly in workshops – within the school structure. The new secondary school moved away from the earlier traditional school pattern, which was essentially marked by the written culture of general education, and made it possible for skilled workers to have an upper secondary school degree in their areas of expertise.

The most recent upper secondary education reform – Reform 1994 – adjusted the curriculum of upper secondary education to meet new demands made by society and the labor market. Follow up on regulations established

by the law of 1994 ascertained a legal right of young people to a three-year upper secondary education until the age of 20 years.

Today it is possible for all groups of pupils to continue their education by attending higher education (HE) institutions, if they have completed at least 35 hours a week of general education distributed on the following subjects: Norwegian (14 hours per week), English (5 hours per week), Social orientation (6 hours per week), Sciences and Ecology (5 hours per week). The larger numbers of students finishing upper secondary schools together with the greater variety in their backgrounds have created pressures for changes in HE institutions. A new Law for Universities and University Colleges, approved by Parliament in 1995 and implemented since January 1, 1996, has brought greater flexibility for choosing learning arenas. It has opened up HE admissions to applicants with non-formal learning, through the Competence Reform (NOU 1999, p.17, Holmesland 2001, 2002), as well as those who wish to acquire new knowledge by means of continuing education. A detailed description of the aims of the Competence Reform is given in an abridged version. These measures also concern teacher education in general, and include many of the requirements for admission to higher education, which were the main entrance route for trade and industry workers to the teaching profession for a long time.

In summary, it is possible to state that during the 1990s, quality and equity was once more reinforced as a fundamental value in the Norwegian educational system. This is observed both in basic education (primary and lower secondary level) and in upper secondary education. Considering these developments, it is also possible to state that the conviction that the school plays an important role in eliminating social differences still remains strong in Norwegian educational policies (Tarrou, 1999, 2001). However, all these changes are part of an intertwined political and cultural context.

2. VOCATIONAL SCHOOLS IN NORWAY – A DEVELOPMENT TOWARDS A SINGLE UPPER SECONDARY SYSTEM

With roots reaching back to the apprenticeship model from the medieval guild system, Technical and Vocational Education and Training (TVET) was looked upon in Norway as a well-defined area of knowledge for a long period of time. Work places constituted the arena for such learning.

Schools for training craftsmen and industry workers appeared at different times in European countries and were established at various paces in line with the advancement of industrialization in the second part of the 19th

century and in the beginning of the 20th century. Anchored in the model of training of the master-apprentice relationship, Norwegian initial vocational training was, for a long time, a well-defined area determined by the learning conditions of the work place concerned with the particular training.

The first school education for apprentices in Norway dates from 1802, when a Sunday school for apprentices was established to teach Norwegian, arithmetic and drawing – subjects adapted to the practical instruction apprentices were receiving in workshops. By 1840, there were seventeen such vocational Sunday Schools. These in turn were replaced by technical evening schools, which lasted three years and must be regarded as the model for today's apprenticeship school in craft and industry. By 1895, there were twelve such schools where theoretical subjects were taught, while practical education took place in the workshop or in the factory (Mjelde 1993, Lorentzen et al. 1998).

At the beginning of industrialization, when craftsmen still had power, the first courses in initial vocational training for iron and metal workers were started (1910) by initiative of the iron and steel industry in Oslo (Mjelde and Tarrou 1992, Mjelde 1993, 2001, Lorentzen, Streitlien, Tarrou, Aase 1998, Wasenden 2000).

This institutionalized form of training expanded slowly before the Second World War. Its development accelerated during the war, and increased rapidly after the Law of Apprenticeship of 1950, in the form of alternated training between enterprises and trade schools. Initial vocational training was systematically instituted within the whole country in the first years after the Second World War. In the 1980's, the apprenticeship law was revised. A new act concerning vocational training came into being (no. 13 of May 1980) (Mjelde 1993, p.77). Crafts and industries that took on apprentices were subsidized, in the belief that a qualified labor force is important to economic growth. This is an argument that was further reinforced during the following decades.

Characteristic of these school systems is a policy of increasing and developing public schooling in order to diminish class contradictions through standard universal education (Mjelde 1993). The extensive expansion of vocational schools for crafts and industry that took place after the Second World War, and the changes that have taken place in the apprenticeship law, have undergone modifications in the course of this expansion. But some aspects are the same today as they were a hundred years ago. One such example is the battle between academic and vocational schooling.

Governing and administration of vocational education inherently carry the contradictions of various interest groups. The governing of vocational

education in schools has been progressively subjected to educational authorities.

Through the Reform of Secondary Education of 1974, a large amount of initial vocational training was inserted into the school structure at the upper secondary level. Part of the initial vocational training continued to be exercised concurrently in the companies as a supplement to the initial vocational training in schools, legitimated by the Apprenticeship Law of Education of 1980. A combination of professional preparation carried out at schools and in enterprises became possible during the period between 1974 and 1994 through the collaboration between industry and official authorities. In this period, the apprenticeship law existed parallel to, but was not well coordinated with, the Upper Secondary School Act of 1974.

The comprehensive reform of education in Norway in 1994, which included initial vocational training, created a special space for collaboration between the school structures and the enterprises in the form of apprenticeship training (see below).

2.1 Upper secondary education and vocational training today

The purposes of the Norwegian basic education have been and still are to emphasize that school must prepare pupils for life and promote equality in society, independent of the individuals' gender, geographical location and economical standard. Education is regarded as important for the development of the modern welfare state – in which Norway still believes – and is based on the values of democracy, of solidarity and of equal opportunities in all areas of life. Thus, the 10 years of unified compulsory basic education constitute the base that precedes upper secondary education in Norway, which includes initial technical and vocational education and training. Upper secondary education offers courses leading to educational qualifications above the lower secondary level.

A system that combines general and vocational upper secondary education has, since the reform in 1974, prepared students to enter HE as well as to receive training at workplaces in the apprenticeship system, which provides them work experience in the trade subject chosen at the upper secondary level.

Through different regulations, it has been made easier for those who have opted for vocational training to acquire the necessary additional qualifications required for admission into higher education. County authorities are obliged by law to provide a follow-up service for young people between 16 and 19 who do not attend any courses within formal

education, or are unemployed. Physically disabled pupils are entitled to more than three years of upper secondary education.

Table 8-1. Distribution of pupils attending upper secondary school

Area of study	All courses	1st year	2nd year	3rd year	Other Education
All areas of study	163 748	63 196	54 374	42 854	3 324
General and Business Studies	83 797	26 906	25 022	31 622	247
Music, Dance and Drama	4 443	1 680	1 424	1 339	--
Sport and Physical Education	6 191	2 216	2 001	1 974	--
Health and Social Care	15 940	6 657	6 546	2 737	--
Agriculture, Fishing and Forestry	3 938	1 655	1 328	955	--
Arts, Crafts and Design	12 891	5 817	4 757	2 317	--
Hotel and Food-Processing Trades	5 972	3 472	2 473	27	--
Building and Construction Trades	4 791	2 684	2 079	28	--
Technical Building Trades	1 913	954	735	224	--
Electrical Trades	8 711	4 292	3 317	1 102	--
Engineering and Mechanical Trades	9 769	5 262	4 007	500	--
Chemical and Processing Trades	772	400	372	--	--
Woodworking Trades	719	377	313	29	--
Media and Communication	295	295	--	--	--
Sales and Service Trades	529	529	--	--	--
Technical school	3 077	--	--	--	3 077

Includes pupils attending private, public and county upper secondary schools.

Technical school is not divided in levels.

Source: Statistisk Sentralbyrå, SSB (Central Bureau of Statistics)

Today, upper secondary education is provided throughout the country and is designed to make education equally accessible to everyone. Prior to the implementation in 1976 of the law of 1974, various types of vocational schools in addition to the traditional Gymnasium existed which provided general education at the upper secondary level. These schools provided

vocational education and training courses in a variety of craft and industry trades and of variable duration. Since 1976, Norway has had an upper secondary school system that combines general theoretical education and vocational training. This integration has given equal status to practical and theoretical education. General theoretical education and vocational education and training are offered side by side, often in the same school building, in classrooms and in school workshops. According to the 1994 reform, pupils, during the first year, take one of 15 foundation courses.

The table 8-1 gives an overview of the distribution of pupils attending upper secondary school according to different areas of study and levels (from the 1st to the 3rd year of upper secondary education).

Specialized courses are offered in the second and third year, i.e., in the advanced courses I and II respectively, and in apprenticeships. Apprenticeship schemes are part of the upper secondary school system. The first two years of training are provided at school, whereas the final specialized part (up to two years) is given at a workplace in the form of on-the-job training. When not enough apprenticeships are available, the county authority must offer training at school in the form of a third year course (advanced course II). The final examination, which gives the trade certification, is the same regardless of whether training has taken place at school or at a workplace.

3. VOCATIONAL EDUCATION AND TRAINING TODAY – ITS RELATION TO PUBLIC AUTHORITIES

Public regulations give the Ministry of Education considerable power regarding decisions about technical and vocational training, independent of whether it takes place at a school or in a work establishment. Today, the Ministry of Education and Research determines whether a trade is to be included under the law of apprenticeship in the enterprises or if it must be placed elsewhere not covered by this law. A National Council for Vocational Training, established by the Ministry of Education for a period of four years, serves as an advisory organ to the ministry when preparing documents related to the inclusion of particular trades under the supervision of the law of apprenticeship.

Each trade that is organized under the law of apprenticeship is attached to a council of education and training, also established by the Ministry of Education. This council usually gathers several trades in the same branch, and prepares educational plans and regulations for certification in the trades

concerned. This council also functions as a channel of complaint for the apprentices. Each county has its own Committee for Vocational Training (Yrkesopplæringsnemnd, YON), which is responsible for the implementation of vocational training. The principal tasks of this committee are:

- a) to function as a mediator between the apprentices and the companies;
- b) to certify the companies as places of vocational training, including the certification of the offices of vocational training or the circles of vocational training;
- c) to supervise the conditions for teaching and learning in the companies; and
- d) to administer the tests for certifying the students as skilled workers.

Within this system, in which there is a common framework for general education and vocational training, the apprentices have the rights and the responsibilities legitimated by the law of apprenticeship in enterprises and by the law for the work environment (Arbeidsmiljøloven, AML). Among the rights, we should mention the apprentice's right to a contract with an enterprise, which is accepted by the public authorities as a place for vocational training and the right to wages in accordance with negotiated tariffs for the period of apprenticeship. The rights also define the time set aside to be away from work in order to take part in formal and theoretical learning during the period of apprenticeship.

The enterprises are obligated to submit the apprentice to tests relevant to the trade in which they are to be examined at the end of the training period, and the apprentice has the right to wages during the tests. If the enterprise, or if the apprentice, wishes to cancel the contract before it is officially over, the cancellation must be approved by the Committee of Vocational Training (YON). If a student is not given a place as apprentice after having completed the two years of upper secondary education at school that precede the training in an enterprise, he/ she has the right to a third year of education at the upper secondary school level. These regulations illustrate the amount of decision power that the Ministry of Education continues to have with regards to technical and vocational training, at school as well as at the workplace.

4. TOWARDS A TEACHER EDUCATION FOR TVET

The first school established for TVET teachers was organized by the Council for Technical Training in 1921, named Christiania Trade and Elementary Workshop School for Craft and Industry. The courses there consisted mainly of lectures combined with demonstrations and exercises in workshops and laboratories. The courses were offered both during the day

and in the evenings, with a duration of up to six weeks. They were aimed at supervisors in different occupations, such as baking, construction, motor and automobile, chemistry and other types of manual work (Mjelde 1993).

This type of teacher training was also offered after WWII and, in many ways, it marks the start of a pedagogical education for technical and vocational teachers. Its development was accentuated when the public authorities of the technical and vocational education prepared a Green Paper in 1943 which stated that the aspiring teacher should be proficient in the use of the same instruments and machines in which their pupils would receive instruction. The same document suggested the establishment of a school for TVET with a minimum duration of 10 to 11 months, perhaps lasting up to two years. The admission requirements proposed were a trade certificate as a qualified worker in a manual occupation or a corresponding education from a technical school. After the new law for TVET and the approval of the curriculum guidelines in 1946, the establishment of education for teachers in TVET was proposed in 1947, as an additional education program in pedagogy, psychology, the Norwegian language and arithmetic, in addition to technical training. The course had a duration of 1,760 hours and was taught over a period of 40 weeks.

Since the Law for Teacher Education of 1975, TE for technical and vocational training has also been included in the higher education (HE) system. The law legitimated education and training for teachers in basic education (primary and lower secondary level), for pre-schools (Kindergarten), for upper secondary schools as far as it regards teacher education for trade or industry subjects (like in Fachhochschulen), and for the compulsory pedagogical course for general subject teachers with diplomas from universities, and for trade and industry workers who become teachers.

As part of the higher education system, all teacher education programs are supposed to fulfill the general requirements for HE institutions in order to meet the needs of today's society regarding teaching and research. In Norway, TE requires both knowledge in the discipline or trade subject taught, and the completion of a one year pedagogical education and training program, based on the theoretical knowledge and practical skills of teaching and learning the different academic and/ or work-based disciplines or trades, occupations and professions. The pedagogical course for becoming a teacher at a Norwegian upper secondary school level is based on a common national curriculum, in order to give equal professional training to all teachers at that level, regardless of the kind of subject or trade they are teaching.

The required pedagogical course is comprised of: didactical competency, social competency, professional ethics competency, and competency in promoting change and development work. The teacher is supposed to be

scientifically strong and master different approaches to facilitate learning. Thus, a certified teacher is expected to have knowledge and experiences in the discipline taught and to practice a variety of teaching methods. In addition, the teacher is required to have the ability to establish collaborative relations (KUF, 2000).

The tables 8-2 to 8-4 give an overview of the number of students admitted, enrolled and those who finished TE within technical and vocational education as compared to general education in the given years.

Table 8-2. Students admitted to Teacher Education in 1997, 1998 and 2000

Type of Teacher Education	Admissions to Teacher Education		
	1997	1998	2000
General Education	2699 (90%)	2888 (92%)	3075 (83%)
Vocational Education	291 (10%)	263 (8%)	626 (17%)
Total	2990 (100%)	3151 (100%)	3701 (100%)

These figures do not include TE for pre-school.
Source: Norwegian data base in social sciences (Norsk samfunnsvitenskapelig datatjeneste, NSD)

Table 8-3. Students registered in Teacher Education in 1996, 1997, 1998, and 2000

Type of Teacher Education	Students Registered in Teacher Education			
	1996	1997	1998	2000
General Education	8906 (90%)	9043 (91%)	9338 (92%)	9395 (90%)
Vocational Education	978 (10%)	942 (9%)	786 (8%)	1042 (10%)
Total	9884 (100%)	9985 (100%)	10124 (100%)	10437 (100%)

These figures do not include TE for pre-school.
Source: Norwegian data base in social sciences (Norsk samfunnsvitenskapelig datatjeneste, NSD).

The tables 8-2, 8-3 and 8-4 show, respectively, the number of students admitted, registered and those who completed primary school teacher education and teacher education for the upper secondary level. The category General Education consists of teacher education for primary school teachers and the one-year initial pedagogical course for teachers of academic subjects at the upper secondary school level. Teacher education in technical and vocational subjects is always aimed at teachers for the upper secondary level.

Based on Tables 8-2 to 8-4, one can see that there has not been much variation in the proportions of students admitted and enrolled in TE in general and vocational education. Table 8-3 shows a slight decrease in the proportion of students finishing vocational education in year 2000. This

lower percentage might reflect entrance to this education in previous years. Considering admission to TE in 2000, one can expect a slight increase in the proportion of students graduating as vocational education teachers.

Table 8-4. Students that completed Teacher Education in 1996, 1997, 1998, and 2000

Type of Teacher Education	Students Who Received a Degree in Teacher Education			
	1996	1997	1998	2000
General Education	1730 (84%)	1829 (86%)	2076 (88%)	1948 (89%)
Vocational Education	323 (16%)	290 (14%)	293 (12%)	232 (11%)
Total	2053 (100%)	2119 (100%)	2369 (100%)	2180 (100%)

These figures do not include TE for pre-school.
 Source: Norwegian data base in social sciences (Norsk samfunnsvitenskapelig datatjeneste, NSD).

5. A THREE YEAR STUDY PROGRAM – A REINFORCEMENT OF THE TVET TEACHING PROFESSION

Teacher education for TVET in Norway today requires a three-year study program, or the equivalent. This education is supplemented by various courses in continuing education, including a Master’s degree in technical and vocational education offered at one institution in Norway. The aims of the newly established three year program for TVET teachers, was outlined in the White Paper of 1996-1997 (St. meld. Nr. 48) voted in by the Parliament, and later translated into a framework for curriculum. The White Paper highlighted that teacher education for TVET should be rooted in four main principles, namely:

- Principle 1: TE for TVET is a double practice field, anchored in the teaching occupation and the profession for which the training qualifies. This means that teacher education for TVET is grounded in and obtains its content from the tasks, functions and through the work culture that characterize the teaching job as well as the different occupations.
- Principle 2: TE for TVET has specific training traditions and methods. This means that education has, as a starting point, the purpose of bringing forward the development of pedagogical principles that provide the basis for technical and vocational training. The teaching forms ought to be task-oriented and work-based, with a mutual exchange between practice and theory. Thus, the point of departure is what is known from experience, which moves toward the unknown and abstract.

- Principle 3: TE for TVET requires comprehensiveness and logical connections within the program of studies. This principle implies that the various components in education must be part of a combined work and, together, should constitute an integrated whole. It is implied that the development of the students' pedagogical competencies ought to be considered and related to, while, concurrently, challenging their professional experiences and further development.
- Principle 4: TE for TVET is as equally valuable an education as other forms of teacher education and of education for other profession-oriented education at the universities and university-colleges. This means that education of teachers for TVET is one specific profession-oriented teacher education and training that corresponds to other types of higher education programs, founded on research-based content. This education offers competencies and possibilities for further development

6. THE EDUCATIONAL PROGRAM FOR PROFESSIONALIZATION OF TEACHERS FOR TVET

The educational program is built upon the four principles previously mentioned. The White Paper Nr. 48 also established the main components of the frame curriculum, which include:

1. Content aimed at vocational pedagogy; with 20 credit points (10 weight points) the content in vocational pedagogy is common to all students and includes themes related to pedagogy, didactics, values, work ethics and other elements relevant for vocational education and training.
2. Content aimed at professional breadth, 60 credit points (30 weight points) This part focuses on foundation courses in upper secondary school and gives an overview of the vocational areas, with a focus on the execution of work and at work culture. It deals also with the possible educational routes to different occupations and the didactics of vocational education.
3. Content aimed at professional depth, 40 credit points (20 weight points) this part aims at providing the student with a deeper knowledge of his/her own occupation. This can be done by focusing on other basic disciplines, didactics of occupations and by development features within a specific occupation. Teacher education also includes a 12 to 14 week practical teaching period. Teaching practice is an integrated part of the

three-year teacher education program and covers about 1/3 of the total study program (1 year).

The White Paper Nr. 48 also emphasized that students in teacher education for TVET already have a formal occupational background and several years of work experience. It is this competence that provides the initial background for working as a teacher in TVET and which shall be further developed. The White Paper also brought forward the issue of who would be the educators for TVET teacher education. Regarding the competencies of educators in charge of carrying out programs for teacher training, it is stated that they shall have a mixed competence in the technical or vocational discipline as well as in vocational pedagogy.

In the Norwegian context, the concept of pedagogy is used in a broad sense in regards to teaching and learning in education. The concept of vocational pedagogy refers to educational activities in the field of teacher education and training for teaching technical and vocational subjects in upper secondary school, including teaching, learning, and developmental work. Vocational pedagogy is anchored in work-based practices as well as in-school-based practices. The concept is also used to describe work-based knowledge that focuses on teaching, as well as the training and learning dimensions of education in trades, occupations and professions, as taught in the school structure or as on-the-job training in business enterprises, and in the interface between the two (Tarrou 2001). The core element in the discipline of vocational pedagogy is the didactics of trades, occupations and professions. This specific vocational didactics links trade subjects in the school structure with the variety of trades, occupations and professions in working life and the learning processes on the two arenas of learning.

The concept of vocational didactics is used in a Norwegian context for describing activities and modes of assessment and evaluation within many sectors of education and training. By focusing on how the selection of learning materials and working methods are made explicit, vocational didactics treats the relation between education and training, i.e. the relation between practice and theory in a teaching situation and with focus on learning, as an integrated part of the execution of a trade, an occupation, or a profession. The concept of vocational didactics has been used, up to now, in Norway mainly within the educational system. It has also been used, but only to small extent, in relation to the facilitation of learning that takes place during training on the job, for example in training towards trades, occupations or professions within the world of work, in adult education, in distance education, in life-long learning or in profession-oriented studies or related to the execution of professions.

Changes that take place today are not isolated and comprise the total social field. This fact leads to the assumption that certain questions concerning two different universes – the school and the enterprises – could be brought together, and that a comparative view could be fruitful (Mitter, 1995). Lien and Mjelde claim that although one of the important intentions of Reform 94 was to bridge the gap between workshop learning and learning in the vocational streams of upper secondary education, this reform did not touch the difficult pedagogical questions involved (Lien and Mjelde in Heikkinen et al.1999, p. 44). They state these difficulties in the form of questions such as: where should learning take place? in workshops or in classrooms? In regard to teaching, they ask: how should vocational teachers and academic teachers co-operate in project-based learning? In another remark, Lien and Mjelde (ibid. 1999) criticize the reform by stating: “The reform program does not take into account the manifold and complex nature of vocational education with the more than 200 different occupations/ trades taught in its ‘Law on Vocational Training for Working Life’.” (Ibid. p. 44).

Lien and Mjelde also point out that another dilemma within vocational teacher education is “how to take the experience-based, skilled worker culture as one’s point of departure.” This doubt is substantiated by results of a research carried out by Tarrou (1995, 1997, 1999), whose findings showed that a difficulty faced by educators of teachers for the vocational sector was that they implicitly carried the universities’ scientific mode of thinking and thus, had this habitus integrated into their way of teaching.

Many university colleges in Norway have profession-oriented programs, for example, nursing and electrical engineering, which are related to occupations taught at the upper secondary level. Some Norwegian educationalists argue that competencies acquired in a profession-oriented program in HE, as nursing for example, is not automatically transferable to the sector of care, in TVET at the upper secondary level. Given that knowledge within an occupation is understood as being largely dependent upon its context and expressed in terms of abilities and attitudes linked to the practical work and the work culture surrounding the specialists within the occupation. This implies that when executing a task, one is linked to the practical field. Thus, teacher education for TVET is understood as having the need to be linked to the work life in which the aspiring teacher has qualifications. Several national debates and academic discussions about the how, what, and why of teaching vocational subjects have taken place over the past 30 years and led to the establishment of the 3-year TE for TVET in four University Colleges since Autumn 2000.

In a comprehensive review about the concepts of pedagogy and didactics in TVET, Tarrou (2002) proposes that vocational pedagogy is used to refer to pedagogical activities in the form of teaching, learning and development

aimed at vocational subjects in the upper secondary school and at teacher education. Tarrow argues that didactics of vocational subjects are more specific, being used when referring to the planning, execution, evaluation and critical analysis of specific teaching and learning situations for learning of trade subjects. In the field of TE, as well as in the field of TVET, the concept of didactics in vocational subjects describes a particular form of didactics that is different from the didactics for subjects in general education. As pointed out by Wasenden, (1999) the didactics of vocational subjects finds itself at the interface between education and training, i.e., between the execution of tasks in a work situation and the practice/ theory dialectics in a teaching situation.

Summarizing, one can state that the meaning and clarification of the concepts of pedagogy and didactics in TVET have been at the core of debates on teaching and learning in TVET in Norway for nearly three decades. No final consensus seems to have been reached yet about the comprehensiveness of each concept. However, the discussions have contributed to paving the way for a better understanding of teaching and learning at school, at work, and at the intersection between these two learning arenas.

7. CONCLUDING REMARKS

Today, the border lines between teaching, training and learning in the school structure and at work places are blurred. Advancements in information and communication technologies used in work places, both public and private, lead to changes that are taking place in work content and in work organization in many trades, occupations and professions. Extension of mass education to the post-secondary level and globalization of the working life also entail great changes for employees. Trades, occupations and professions close, arise or are transformed. Due to all these changes, researchers (Tanguy, 1994, Tarrow, 2002) argue that the boundaries between work, occupation and profession have become more vague and unstable.

Consequently, activities in the field of TVET require studies about its content, its working methods and its social context. Furthermore, it underscores the importance of providing teachers in TVET with a solid knowledge basis and practical experience in teaching and learning in their specific areas of expertise, both within the educational system and at the work place. Thus, the need to seek a deep understanding of *vocational pedagogy* as a significant field of knowledge in the interplay between education, work and professions becomes considerable. This need embraces the secondary school level and also the education and training of teachers for

profession-oriented studies towards the corresponding TVET sector. This area constitutes the main focus of research and outreach activities at the Center for research on Education and Work at Akershus University College.

However, the road to this integration is only partially paved. There are many changes occurring at a fast pace that are challenging society and TVET as well. Instead of affirmations, perhaps it is more adequate to close this article with some questions for further reflections, such as:

How can the integration of knowledge into general subjects, for example, mathematics and physics in TVET be improved? How can the organization of teaching of Norwegians motivate students and make them understand that knowledge of their mother tongue is important at school and for life? Is it possible to keep the welfare state and the ideal of equality, and at the same time be competitive and not inhibit initiative takers among different stakeholders? Finally, as far as we see it, one main question is to be raised and be made subject to empirical studies: What does one learn best at school and what does one learn best at work?

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Chapter 9

VOCATIONAL TEACHERS IN RUSSIA

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1. HISTORICAL DEVELOPMENT OF THE VOCATIONAL AND TECHNICAL TEACHING PROFESSION

In order to facilitate a better interpretation of the prevailing situation pertaining to vocational training in Russia, a short overview of the history of the Russian education system will hopefully be permitted at the outset.

Before Russian educational policy saw itself at the beginning of the nineties in a position of being able to consider a fundamental reform of the educational system, more than 70 years of Soviet pedagogy lay behind the system. The long period of communist rule continues to exercise a tangible influence on education policy developments even today.

Educational policy of the Soviet Union was initially based on the writings of Karl Marx. Marx, the philosopher, had occasionally addressed issues relating to education in the course of compiling his comprehensive literary work. The key points of these works were, on the one hand, education towards the “species-being” (*Gattungswesen*), an individual who comprehends nature as the source of changes in the individual “lived world” (*Lebenswelt*) but also as changeable and mouldable by people. For Marx, participation in the work process formed part of this form of incarnation. On the other hand, while in England, Marx had discovered the realities existing within large industrial operations. Children and juveniles had been integrated into the work process out of economic necessity, without receiving a

minimum education. Education outside the production process was unheard of.

Despite these drawbacks, Marx postulated early on that factories should certainly have a say in the structuring of education (so-called educational clauses making this possible), but that this had to take place in an accountable manner. He developed the idea of the “education of the future” as a way of linking work and learning (Rutt, 1968). After the 1917 October Revolution in Russia, the writings of Marx, in particular the passages concerning the “species-being” (translated incorrectly by some Soviet politicians as citizen of the state and therefore misinterpreted), continued to play a significant role. Russia itself had substantial, renowned guiding intellectual forces who were in favor of the integration of work and learning within the educational process, among them the educationalist Uschinsky and the literary figure L. N. Tolstoy. Uschinsky had already formulated “The psychical and educational significance of work” prior to Marx and advocated linking education with physical work. The liberal-individualistic pedagogy of Tolstoy still received much attention during the first years after the revolution and also contributed to the establishment of the polytechnic concept of education through the principle of “practical industriousness.”

The situation in Russia during the twenties was characterized by vigorous debate on all social issues, including issues relating to education. In the end, the policy, which in the beginning years of the Soviet Union was strongly controlled by inherent economic necessities, (*inter alia* Lenin) asserted itself against reform educationalists, who propagated a polytechnic conceptual design (*inter alia* Krupskaya and Blonsky).

In 1920, Lenin criticized the process of polytechnization as a process that required too much time. He wanted productive carpenters, metalworkers and others to be immediately ready in order to raise the standard within the country. In addition, schools and education were to be subservient to the party and utilized as a weapon in the class struggle. This already signified the end of free pedagogic thought.

Nonetheless, the school reformist plans of P. P. Blonsky played a formative role in the development of the school system. A unified labor school was developed that maintained close links with the sites of production and also utilized them for educational purposes. However, the passages regarding the attitudes of Lenin already clearly show that, in the decisive years of constituting the educational system, vocational education received little attention (Wittig, 1964).

In the thirties, under Stalin, pressure on the vocational components of the education system increased. Stalin rejected the linking of work with learning as an elementary component of the education system, because due to the

restraint of partisanship the focus had to be on implementing the education of the “Soviet people.”

Overall, the level of education was razed through a significant reduction in the number of illiterates and the expansion of the school network. The complete subordination of schools to the primacy of politics was enforced.

Reformist education no longer stood much of a chance. The project method was abolished, labor and group education became frontal education, and the labor school became transformed into a book-and-learning school.

The labor force was educated via the principle of labor force reserves according to planning, and to some extent under coercion. Virtually nothing remained of the old idea of sensibly combining labor and learning. Educational concepts that were implemented at schools had no connection to the educational and learning processes at plants and factories. The negative reputation of vocational training then manifested itself because vocational training bore no clear connection at all to education towards a “higher Soviet person.” Vocational training, or dropping out of the education system early and being integrated into the labor process were something for the “rest.” The authors of the 1918 basic principles of the unified labor school had required individual structuring of teaching to be unrestricted, or more precisely: “Individual structuring is to be understood as referring to a teacher analysing the tendencies and particular character traits of each individual pupil. This allows for educational content and the demands made of pupils to be adjusted to a larger degree to their individual requirements.” At the same time, one should not forget that the bureaucratic organization of which was characteristic for the administration of the country during the periods of totalitarianism and stagnation, resulted in a grave deformation of the Soviet school system that later had to be rectified. In the forties and fifties, a type of technocratic fetishism established a trend that resulted in an underestimation of education in the humanities. Under the premise of enforcing general middle education, teaching was awarded precedence above education; the development of educational content was neglected (Razumovskij, 1990).

At the end of the fifties, the vocational education system – as well as the education system as a whole – was transformed by the law passed on 14/12/58 “on the consolidation of the linkage between school and life and on the continued development of the national education system in the USSR” (*Zakon ob ukreplenii svjazi školy s žiznju i o dal’nejšem razvitii sistemy narodnogo obrazovanija v SSSR*). The significant status of vocational training has been realized more strongly since then, and more attention has once again been paid to co-operation between schools and places of work. Trainers in basic industries then also received some consideration in the specialized press. Under the heading of “The Teacher Who is Always There,” it was stated:

“At Soviet plants and factories, many permanent workforce members are becoming teachers and educators of girls and boys who enter production facilities. Without compensation, they pass on their substantial experience to the young workers and help them to master a vocation.” What is stressed here is the proximity of educators to trainees. “The workplaces of forewomen and apprentices are next to one another, so that the teacher can provide assistance at all times.” (Justin and Püttmann, 1974)

In the second half of the seventies, the system of vocational training at the vocational technical schools (PTU) and middle vocational schools in the USSR was once again strengthened substantially, i.e. the number of graduates more than doubled. The shortage of qualified workers was acute, and policy-makers were willing to educate skilled workers in educational institutions envisaged for this purpose. Although practical education, i.e. a workplace-oriented education of a few months in factories, continued to enjoy wide popularity, it was possible to reduce the ratio of practical education to education at vocational technical schools from 4:1 in 1950 to 2.5:1 in 1972 (Goldzand et al, 1977). In tandem with the expansion of vocational education at vocational technical schools, there was of course a concomitant growth in demand for trained teachers. In 1975, 500 engineering educationalists were educated for posts at vocational technical schools at Russian academies. A new specialized medium-level occupation came into being: the vocational education engineer.

By now there were also more vocational technical schools and middle vocational schools of the industry-educational type. Apart from vocational content, these educational institutions also imparted educational knowledge to provide preparation for the profession of specialized teacher. Graduates were given preference during the hiring process at the relevant academies.

The scientific-didactic center for vocational teacher training was the engineering-pedagogic faculty of the Polytechnic Institute at Minsk (chairs: educational disciplines and technical teaching aids, as well as the scientific organization of the teaching process). In addition, there were the specialized institutes, e.g. the Polytechnic Institute at Leningrad with the faculty for teachers of electronic subjects, or the Polytechnic Institute at Vladimir for the mechanical engineering professions.

The training of teachers for instruction in production facilities (so-called instructors) was to be concentrated on the middle vocational schools of the industrial and pedagogic type (1975: 69 educational establishments, 60,000 pupils, 30 specialized subjects).

Some of these institutions had been established under Stalin in 1943 in order to ensure the education of the “labor force reserves.” The prerequisite

for acceptance was middle educational attainment and a three-year in-service practical. A third of the education served the purpose of pedagogic education (Grüner, 1975, p. 147).

As a rule, well-trained teaching staff is trained at the medium-level specialization educational institutions. In 1975, more than 85% of the teachers at the middle vocational schools had an academy education (Goldzand et al, 1977). Here too, however, the supply of teaching staff constantly lagged behind demand.

The scientific-technical revolution (as it was officially dubbed) necessitated changes in the process of production. People with a middle specialized education were utilized as qualified employees and technical managers for automatically and electronically controlled equipment and plant units.

Entry into a plant as a worker operating complicated machinery and subsequent promotion to the post of brigade leader or plant manager was quite possible.

Soviet managers had recognized that general technical education was to produce skilled labor that was able to adapt quickly to modern, complicated plant and production systems. Practical vocational education was conducted on the shop floors and at plants and factories by teachers trained to give instruction in production (instructors). These were experienced technicians or forewomen and foremen, in part from the same vocational schools or graduates of vocational schools of the industrial or pedagogic type. In 1971, a quarter of this group were part-time teachers, i.e. their main employment was on site. This applied in particular to teachers at the medical vocational schools, who worked in hospitals. A large number of the teachers for general technical and specialized subjects, who had graduated from an academy with the appropriate profile and had worked at plants for a number of years, possessed no pedagogical training or any systematic pedagogic experience. For this reason, practical education in the middle vocational schools was envisaged for some of the academy students.

The advanced education opportunities offered by the state were often not geared towards the demands of the “teachers from middle educational institutions” clientele. All sectors of the USSR had their own institutions for the advanced qualification of specialized teachers. From 1974 onwards, state inspections took place at middle vocational schools. Every 5 years, the qualifications of specialized teachers were inspected by supervisors “sitting in” on lessons and lectures. The remuneration of teachers was usually based on the level of qualification. The instructors (teachers for the purposes of instruction in production) and teachers for the general technical and specialized disciplines received credit for the duration of their engagement at the plant. In summary, it was possible to divide teaching staff at the

vocational education institutions into three groups in the mid-seventies (Grüner, 1975, p. 147):

1. Teachers for general educational instruction: Study at an educational academy or a university
2. Teachers for vocational theoretical instruction: Graduates of technical, economic and similar academies. There was no course of studies in vocational pedagogy.
3. Teachers in the instruction of production: Foremen and forewomen with practical experience, in part having attended an industrial-pedagogic technical school.

Represented in a simplified form, the vocational education system in Russia today is still strongly characterized by the foundation pillars established during the years of the Soviet phase. These pillars are the full-time school organization with practical phases on site and the division into two fields, i.e. vocational primary and secondary education, often also referred to as basic and middle education.

Until the political and social tide turned in 1991, these two qualification levels were represented relatively clearly by two types of schools: the vocational technical school⁵⁶ [*Professional'no-techničeskoe učilišče*] and the middle vocational schools (e.g. technical schools) [*Srednee Special'noe Učebnoe Zavedenie*]. Today, these boundaries are becoming more and more blurred, since the educational institutions as a matter of principle are able to provide all forms and types of educational programs. The prerequisite for this is merely accreditation by the educational administration.

Despite all tendencies to modernization, it has not been possible to alleviate the main problem of the vocational education system to any significant degree, particularly its low acceptance as a consequence of its extremely poor image. This applies in particular to vocational primary education, and the scarcity of material primarily has an historical basis. For years, the vocational technical school had been considered a kind of “collecting tank” for less performance capable and less academically eager students. In addition, it was used by young people from the rural areas as a springboard for possible integration into urban labor jobs.

The Stalinist era of the Soviet Union also represents a difficult historical deficit of the education system: the erstwhile party chair of the CPSU in the forties used vocational technical education institutions to integrate “recruited” (more or less coerced) young people into the system of “labor force reserves.”

⁵⁶ In publications regarding this topic, the abbreviation PTU is often encountered, which stands for the Russian description: *Professional'no-techničeskoe učilišče*.

Substantial energies were expended, even during the time of the Soviet Union, in order to counter the dilemma of the insufficient acceptance of the vocational education system to some extent. The strengthening of secondary vocational education proved to be a useful starting point in this direction in the seventies. However, an even more important factor appears to be that an extensive network of opportunities for dual qualification has developed over the years. Both at the vocational technical schools and at the institutions of middle specialized education, it was and is possible, in specific circumstances, to attain a vocational qualification, as well as continue along the path of general education leading to the entitlement to admission to an academy. The choice of young people for a particular vocational direction in their educational biography therefore did not necessarily lead to a one-way street or even a dead end. Sectors of the economy and plants also acted as supporters of vocational schools in order to ensure the relevant qualifications for themselves. Although the base financing emanated from the state educational budget, local planning was largely in the hands of economic bodies and so-called basis plants, which, depending on their interests and opportunities, also ensured that schools were well-equipped.

Despite claimed equality, secondary education, due to its links to the plants, was very heterogeneous (i.e. like the plants themselves) (The World Bank 2001, p. 12). Besides state financing at various levels – the municipal level here also being more strongly addressed – the individual schools gained substantial room for supplemental financing through the educational network. This affords them wide-ranging financial autonomy, for example through the sale of some of their own products manufactured in the school workshops, through services, including training and advanced training for plants or the labor administration on the contractual basis referred to above, or through renting out school buildings, enabling schools to gain direct entry into the market as small businesses.

2. FIELDS OF EMPLOYMENT, OCCUPATIONAL/ PROFESSIONAL PROFILES AND QUALIFICATIONS

Today, vocational education staff is required and employed at all levels of the educational system. At the general educational schools of the primary and secondary sector, in certain circumstances vocational, pedagogically qualified teachers are already being utilized for the subject of labor theory and teaching. In the vocational education sector, based on ISCED classification, four levels are distinguished:

1. vocational based education (primary and secondary) at vocational technical schools and Berufsslyceen (roughly: vocational colleges), as well as institutions for middle specialized education;
2. post-secondary vocational education at institutions for middle specialized education (e.g. technical schools, colleges etc.);
3. higher vocational education (academies, universities);
4. post-university vocational education (education of candidates or doctors of science).

It is somewhat difficult to track the transition from level 1 to level 2, since the institutions for middle specialized education delivering this extremely important contribution to the qualification of skilled labor in the country are positioned at the intersection between them. In the Russian trade press, a distinction is still made between vocational primary education (vocational technical schools and vocational high schools for girls), vocational middle education (at institutions of specialized middle education) and higher vocational education (at academy institutions).

Vocational basic education or primary vocational education:

1. After obtaining basic education (nine years), one or two years at a vocational technical education institution without attaining a full middle education.
2. After obtaining basic education (nine years), three to four years at a vocational technical education institution attaining full middle education.
3. After obtaining a full middle education (eleven years), one or two years at a vocational technical education institution. The length of education at the vocational technical education institution depends on the complexity and the degree of innovation of the vocation to be learned.

The vocational technical education institutions maintain cooperative relationships with plants in order to guarantee a practical educational component there. The curricula are developed by the school institutions. During this task, the schools orient themselves to national and regional standards of education, which outlines the minimum capabilities and skills that graduates of the relevant educational institution must attain. The plants play a subordinate role during the structuring of curricula. Their representatives can be consulted as advisors during the development of curricula or as members of a testing commission. 40% of the institutions for primary education are financed by the regions. Some previous vocational technical schools are today referred to today as Berufsslyceen (roughly: vocational colleges). Although these offer teaching units in secondary vocational education, the recognition of the quality standard remains very controversial amongst the informed public. Some Lyceen have of late

adopted the name of the vocational field to be imparted, e.g. Motor Mechanics Lyceum or “Service” Lyceum.

Two categories of teaching staff are distinguished:

1. Specialized teachers who provide instruction in the subject theory of their specific discipline, i.e. electrical engineering, electronics and mechanical engineering.
2. Instructors who are responsible for practical education, both in workshops in the schools and at the plants.

We only encounter instructors in secondary vocational education in some technical sectors that are closely connected to institutions of primary vocational education. This does not mean that practical instruction no longer takes place within secondary vocational education. The difference to primary vocational education only exists in terms of the practical education within plants also being the responsibility of the specialized teachers of the relevant schools.

In addition to the teaching staff, most secondary educational institutions and some primary educational institutions employ specialized personnel for the methodical development of curriculum. They are responsible for the quality of lessons, the development of teaching material, the introduction of new teaching technologies and the advanced education of the teaching staff (ETF 2002).

At the middle specialized education institutions, new standards have been applied since September 2002. The education system at the middle level is intended to become more open as a result of these measures and offer better opportunities for adjustment to the labor market. In addition, the new standards afford the individual schools greater freedom during the conceptualization of the courses they offer. Important components of the new standards are the division of the education being offered into two levels (basic and high), the new classification of departments (254 professions amalgamated into 29 groups) and the specification of state minimum requirements at individual levels⁵⁷.

The new classification takes the demands of the market more strongly into account, in that up to 30% of the vocational curriculum can be structured flexibly and adapted to the needs of the market (Maksimovic 2001).

A look at the participation of young people in education shows that the direct route to degree qualification clearly continues to represent the ultimately preferred route within the Russian education system. What has been particularly important in earlier years is that it has been possible to

⁵⁷ Ucitel'skaja gazeta, 28,29 16.07.2002, p. 27.

achieve significant reductions in the number of those dropping out of the education system entirely. This applies foremost to the transition after the ninth grade of the general educational middle school. In 2000, 99.4% of the students of that year continued their school education. The majority of these transferred across to the 10th level of education of the general educational middle school (69.3%). Around a quarter (23.4%) decided in favor of a vocational technical school, and 6.8% managed the leap to an institution for middle specialized education.

Of the graduates at the 11th level of education of the general educational junior high school in the same year, 76.8% of the students matriculated into an academy. Only a little over 20% decided in favor of vocational education, 8.3% in the form of a vocational technical school, as well as 8.3% for an institution for middle specialized education. 13.6% in this grade did not continue their education and directly entered gainful employment.⁵⁸ A division of the educational institutions could also be conducted on the basis of the type of financing. At a state level, it is initially possible to distinguish amongst four groups (ETF 2002).

- Institutions of the Federation financed by the Federation,
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- Institutions of the Federation financed by the regions,
- Institutions of the regions of the Federation financed by the Federation.

This division would be of particular significance if the vocational education system and the participating institutions were to undergo a fundamental reform. An unwritten law applies in Russia: whoever pays, also bears the responsibility. In this way, regional reforms could take effect particularly in terms of the second and third group, whereas for the first and fourth group the long route via the government in Moscow would have to be followed. Extracurricular vocational education, for example, takes place in the form of in-service training (sometimes referred to as “learning by doing”) within the industry. This type of education is very difficult to capture and describe both statistically and in terms of content. In the first half of the year, six hours once a week; in the second half of the year, six hours a day twice a week. In the second year, education takes place in work teams under the guidance of a tutor at the plant.

⁵⁸ Ucitel'skaja gazeta, 28,29 16/07/2002, p. 27.

3. TVET TEACHER EDUCATION

The Russian Federation maintains two specialized academic institutions that educate engineering teachers for primary education: the Ural Vocational Pedagogic University and the Pedagogic Institute for Engineering in Nischni Novgorod. In addition there are specialized industrial pedagogic institutions (technical schools or colleges) are available for the education of teaching staff for secondary vocational education.

According to Russian law, each employee has the right, every five years, to request a sabbatical of one year for advanced education measures. For teachers in the state vocational education system this means that they are required to undergo advanced education at an advanced educational institution of the state. A standard course takes 72 hours and leads to a state certificate (ETF, 2002, p. 39.)

The education ministry in Moscow is directly responsible for a number of institutions for the education and advanced training of teachers. Deserving of foremost mention in this regard is the Academy for the Education and Advanced Education of Teaching Staff. In addition to this, three educational and advanced educational institutions for teaching staff in vocational primary education and 103 departments/ nine centers for the education and advanced education of academy teachers and teaching staff of middle specialized education address the issues of adapting qualifications to current requirements.

In 1999, 18,400 teaching staff members availed themselves of the opportunities for advanced vocational education. Of the participants in the program, almost 80% had an academy education and approx. 20% a middle specialized education. The education of these “educationalists” is guaranteed by 55 colleges and 60 academy institutions. Pedagogic education in one of two institutions for teaching staff in vocational primary education imparts capabilities and skills for teaching in 12-15 different subjects. Middle pedagogic education prepares students for teaching in over 18 subjects, whereas pedagogic academy education provides preparation for pedagogic deployment in over 60 specialized disciplines. A methodological center for secondary vocational schools exists on the federal level. The main functions of methodological centers are (Svärd-Ylilehto and Vassina, 1999, p. 10):

- scientific and methodological support for state educational centers;
- didactic and methodological support regarding new contents of education;
- pedagogical information;
- needs analysis for improving the qualification of VET staff;
- support to the regional educational authorities in the development and implementation of

- programs of initial vocational education;
- methodological support and coordination of methodological work at the school level;
- collecting innovative pedagogical experience;
- expertise in methodological documentation and teaching materials;
- participation in the formal assessment (“attestation”) of VET staff on the level of schools;
- improving qualifications of VET staff;
- development of drafts of regulative documentation.

Annually, approximately 15,000 young teachers successfully complete their attendance at a pedagogical academy (ETF, 2000, p. 35). In the year 2000, a total of 150,000 full-time and part-time teachers were employed in Russia at the vocational schools at the middle level. Of this teaching staff, 93% had successfully completed their attendance at an institution of higher education. 3.3% found themselves in the process of preparing their doctoral dissertation or had already obtained their doctorate. Newer figures confirm a continuing trend of rising formal qualifications amongst teachers at institutions for middle specialized education. Today, therefore, more teachers than ever are teaching with the title of Candidate of Science or Doctor of Science. A problem continues to exist in terms of low practical experience and high age. Only 16% of all educationalists are below the age of 30, and 34% are under 40 years old. Three-quarters of all educationalists are women⁵⁹. In the sphere of vocational primary education, the situation looked a little different. Here, only 53.9% of the teachers had obtained an academy education. Of this group, in turn, only 11.7% chose an academic career. Of the instructors (practical teaching staff), 6.4% had completed their academy education, and 30.3% had completed their middle education. Today, the level of qualification of both these groups of people combined (educationalists and instructors) looks as follows:⁶⁰

- 56.8% have obtained an academy education
- 35.2% have completed their middle specialized education
- 8% have completed their middle educational attainment (e.g. after 11 years of general educational middle school)

The proportion of women amongst the teaching staff was approximately 61.4%. The pupil-teacher ratio was 11:1 at the vocational technical schools in the nineties. In the middle specialized education sector no comparable

⁵⁹ Teachers at specialized schools – an irreplaceable shortfall? *Ucitel'skaja gazeta*. No. 26 of 25/06/2002.

⁶⁰ *Ucitel'skaja gazeta*, no. 9 of 26/02/2002, p. 16.

figures were documented or not they were indicated in the published statistics (The World Bank, 2001, p.6). Of the people who conducted practical instruction at plants, 22.2% had an academy education. A third of the educators within plants had obtained a formal level of qualification that was below the level of those to be educated. The practical educators of vocational primary education are as a rule engineers or technicians that have no additional psychological or pedagogic qualifications. The ministry of education governs attestation by means of normative legal principles. The educational staff is issued verifications of qualifications in line with their professional standing. The categories' highest three are considered for the sector of vocational education.

In the Swerlowsk area, attestation takes place in three stages (Seher, 1994):

1. Assessment of the practical vocation, surveying the trainees, appraisal of job aptitude, standardized lesson evaluation
2. Assessment of vocational pedagogic competence Qualification testing: examinations in education, psychology, didactics and the teaching subject (didactics being replaceable with a scientific-methodological project).
3. Results of the first two steps are discussed by the commission, and the qualification category is subsequently awarded for five years.

In comparison to numerous states in Western Europe, the teaching staff in teacher education are very young during their first posting after they have obtained their degree and also have little practical experience. They commence their studies at the academy at the age of 15 or 16 years and have already graduated after three to five years (usually four) (Garner and Harper, 1999). Teachers at vocational education institutions are organized into the Union of Vocational School Teachers, which, however, hardly plays any role in the solution of particular problems in specific vocational fields. What appears more important in this regard is co-operation in the so-called methodical centers of the individual schools, which is used by teachers of the individual disciplines for the exchange of views and experiences.

4. PRACTICE OF TEACHING AND INSTRUCTION AND PROFESSIONAL REALITY

If one were to have placed trust in the vocational policy comments of the nineties emanating from the ministry of education, one could expect today to be dealing with a completely new generation of teachers in Russia. The education minister, Tkatschenko, declared in 1994:

“The fundamental task of teacher education is being transferred: to prepare not only a specialist subject teacher, but also an organization of the educational process, a pedagogue, capable of installing in the pupil a certain amount of knowledge and skills and of participating with the student in a joint creation of a young personality.” (Webber and Webber, 1994)

The realities in the first half of the nineties at Russian schools looked different, if one is to believe the random sample analysis outlined below. A team of scientists conducted a comparison of schools (three general educational middle schools in Russia, one secondary school/ comprehensive school/ grammar school each in Germany) and teaching in Russia and Germany (Glowka et al, 1995). This study initially led to the sobering conclusion that, as a rule, the innovators amongst educationalists could not expect a better life. The observation that, at the outset of perestroika, higher innovative activity could be detected amongst teachers is therefore all the more surprising. Unfortunately, concerns about making a daily living impeded this trend. A reason for the initial positive impression was the fact that teachers in Russia were keen to exhibit what was “new and innovative.” They therefore saw their work as a part of the advancement in their country, and sometimes this appeared more important to them than the actual content of the curriculum.

Teachers spent more time on their lesson preparation. A Russian superior placed far more importance on conformance to the formal didactic structure, which exhibited a clear introduction and conclusion to a curriculum phase. It was required of teachers to have developed planning for their lessons. Until very recently, the curricula and lesson plans were regulated by an obligatory state subject agenda and by textbooks. Traditional methodology predominated in Russian schools. Only in recent years have Russian teachers seen themselves as autonomous individuals, who through their actions can raise the quality of education and as a result improve their own situation. The main difference in comparison to Western education was the implementation. Education was workplace oriented and not occupation oriented. In terms of knowledge, Russian schools were successful on an international level, but less so in terms of problem solving strategies, innovative thinking, and creativity (The World Bank, 2001, p. 10).

The skills of Russian teachers had something artisan-like about them; one could acquire these and then be assured of success. The consequence was that very young teachers were successful relatively quickly. They were able to provide instruction in a traditional manner. However, it is at the vocational technical schools in particular that the aging of the teaching staff continues unabated. By now the average age is 50 years. The expected entry

of experienced young forewomen and foremen from production into the vocational technical schools did not take place. Just subsequent to the fall of the Iron Curtain, such a development had been expected, due to the economic difficulties in which many plants found themselves. Reasons for this, other than low payment (also see later in this chapter) are the sometimes-difficult interaction with young people (poor marks, police registration) and obsolete technology. The latter point applies in particular to aspiring instructors⁶¹. A survey conducted amongst teachers and instructors in 1999 provided insight into the situation of teaching staff in the sphere of vocational education in three regions of North-West Russia (St. Petersburg, the Leningrad area and Karelia) (ETF, 2002). Teacher education can be acquired at educational and specialized vocational pedagogic (specialized subject) institutions. The instructors, as a rule, have a middle level education, and some have a higher level education. The pedagogic qualifications of instructors differ vastly from region to region, e.g. in the North-West region they tend to be high, whereas they are often lower elsewhere. Additional pedagogic education for specialized teachers is offered to a lesser degree than additional courses of this type for instructors. The problem is that there is no formal requirement for teachers or instructors to obtain further pedagogic education. Often, the necessity for advanced pedagogic education is compensated for by advanced education with occupation specific content.

The main problems pertaining to advanced education for teaching staff are the absence of a sectoral strategy and insufficient finances. Links to industry are important in order to ensure that education is up to date. However, due to cost reasons, industry prefers to withdraw at the moment, and educates its own staff, rather than using teachers at schools.

A sociological study commissioned by the ministry of education and carried out by the Institute for the Development of Vocational Education has provided further insights into the situation pertaining to training within the system of primary vocational education. 25,000 pupils and 5,000 teachers throughout Russia were surveyed (Molodcova, 2002).

The motivation of instructors to undergo advanced education may be classified as very high. As already noted in Chapter 2, only 6.4% of this group of people have an academy education and 30.3% have a middle specialized qualification. (Survey results are somewhat higher in this regard: 20% have completed their academy education, but often in an unrelated area of specialization; 40% have obtained a specialized qualification).

⁶¹ Ucitel'skaja gazeta, no. 9 of 26/02/2002, p. 16.

In contrast to this, willingness to obtain an academy qualification was recorded at 76% in the survey, and 10% of the surveyed instructors said they would even enter an academic career if provided the opportunity.

Advanced education in general was advocated by 45% of the overall teaching staff (educationalists and instructors).

The survey addresses the social position of teaching staff in somewhat more detail. The results on this point provide some indication of just how important the creation of legal framework conditions for the remuneration of teachers is if the education sector is not to lose its best people.

In total, 40% of educationalists and instructors have a low standard of living with their wages, and 27% find it necessary to put themselves into debt in order to maintain a normal standard of living. Small plots with a little house in the country, in which the parents also live in some instances, provide a considerable contribution towards daily requirements. 70% of the respondents profited from such property.

The results concerning the intellectual maturity of the educators were sobering, these, however, also be traced back to the modest economic condition. They can therefore seldom afford specialized periodicals. Teachers primarily obtain their information from three periodicals: *Komsomol'skaja Prawda*, *Argumenty i Fakty* and *Utschit'elskaja Gazeta*, regular access to the Internet being the absolute exception. Only 9.8% ever use a computer. Most teachers watch television in their spare time, with only 30-40% being interested in political and social issues. Many educators (31%) think that the education of pupils does not form part of their tasks, and would prefer to leave these functions to other organizations, e.g. youth federations.

The results of the social study once again clearly indicate why more and more young teachers today find it difficult to make a decision in favor of teaching activities at an institution of primary vocational education. This unfortunately also applies to graduates of industrial pedagogic academies. In part, this can be traced back to a re-orientation after the completion of studies, but many experts assert that the systematics of their career are not known in detail to graduates, and that they consequently do not take their vocation seriously. The call for a return to the "old" system or for more stringent statutory regulations in this regard is growing louder.

A study of the World Bank also reaches a less than favorable conclusion regarding the motivation of teaching staff within vocational education. Page 10 of the relevant publication reads as follows:

"Staff training is similarly outdated, and teaching loads are sometimes light, but declines in service conditions and remuneration have destroyed motivation for self-improvement, so many staff are demoralized and

resistant to change, seeing it as primarily a threat to the little they do have.” (The World Bank, 2001, p. 10).

There is mention of a current shortfall in teaching staff in the sphere of middle specialized education. Over the last five years, the number of applications for admission to institutions of middle specialized education and academies has increased by 11%, without an adequate additional number of teaching staff simultaneously having been educated.

The main reason for avoiding the teaching profession is low remuneration. Whereas a young educated teacher can earn 4,000 rubles per month at a plant immediately after graduating from the academy, the average wage for educationalists at middle specialized schools was only 2,500 rubles per month.

In practice, some competent schools attempt to compensate for this dilemma by trying to increase competition among educational institutions in order to attain a more favorable position themselves. Better schools would also be able to pay higher wages. As a result, talented pupils would seek out good schools for themselves and would also be prepared to pay tuition fees.

A further possibility for increasing the school budget lies in securing licenses for advanced education and retraining measures in order to gain a better basis for relatively lucrative co-operation with the labor office⁶². In terms of educational institutions for initial education, such a possibility exists for the regional educational authorities, institutions for middle specialized education to turn to the ministry of education in Moscow.

In terms of the prestige of vocational education it may be said that the situation has improved somewhat over the last few years, something that can primarily be traced back to two factors. Firstly, many talented young people can no longer afford an education at an academy and therefore have to be satisfied with a vocational route of education, contributing to the raising of standards and higher prestige, and secondly the increase in popularity of engineering academy education (the applicant-academy place availability ratio changing from 2:1 in 1997 to 2,7:1 in 2000) also brought about higher prestige for vocational technical education⁶³.

⁶² Teachers at specialized schools – an irreplaceable shortfall? *Ucitel'skaja gazeta*. No. 26 of 25/06/2002.

⁶³ Professional'noe obrazovanie. In: *Ucitel'skaja gazeta*, no. 49 of 28/11/2000, pp. 8-9.

5. STATE OF THE ART AND FURTHER PERSPECTIVES OF PROFESSIONALIZATION

At the beginning of this chapter the main problems of the vocational education and training system in Russia are listed again (Svärd-Ylilehto and Vassina, 1999):

- Lack of a system for VET
- Malfunctioning forms of teacher training and further education
- The profiling of teaching staff does not correspond to the needs of the profession
- Missing pedagogical qualifications and low level of pedagogical skills
- Inadequacies in the system of financing of further training
- Certification problems in further training and upgrading

Another publication points out the following aspects:

- Low salary
- Lack of certification of practical experience in VET institutions.
- Bad position of the VET system in general.
- The consequence of this is: very low legal status and social protection for employees.
- No interaction between the VET system and the system for teacher qualification (ETF, 2000, p. 34-35).

With the reform of the VET system in Russia the regions are increasingly being asked to participate in the process. “The problems of exploring the labor market, developing a new model of vocational schools, and training teachers to work there are increasingly becoming more a part of the regions responsibilities (The state council of the Russian Federation, 2002).” The competence of federal authorities in vocational education includes the establishment of the procedure of teacher certification (UNESCO UNEVOC, 1999, p. 6). To enhance the social situation of the teachers a national doctrine of education was developed (Ministry of Education 2002):

Payment of the pedagogical staff:

- To provide an adequate standard of living and creative activity of pedagogical personnel the following volume of payments should be fixed:
 - minimum rate (official salary) of pedagogical personnel – not lower than the average salary in the Russian Federation
 - average rate (official salary) of pedagogical personnel in preschool, general secondary, primary vocational and secondary vocational education – half as much again as the average salary in the Russian Federation

- average rate (official salary) of professorial and teaching staff of the higher educational institutions - three times the average salary in the Russian Federation

To concede to the right for pedagogical personnel who have a length of pedagogical service of more than 25 years to obtain the national pension (for long service) even if they continue their pedagogical activity.

To fix a pension for professorial and teaching staff as well as for scientific personnel of higher educational institutions at a volume not lower than 80 per cent of the average payments at their main place of work.

An official report of the State Council of the Russian Federation with the title “Education Policy at the Contemporary Stage” shows roughly in which direction the educational system is going to be developed:

“To ensure a new quality of VET and professional education it is necessary to:

- forecast the needs of the labor market and create an interactive network of VET and higher education institutions, recruiting and information agencies, employment services; to bridge the gap between VET and professional education and the needs of territorial labor markets;
- raise the efficiency of the VET and professional education market; overcome its segmentation, unjustified monopolies and the inadequate information available to customers;
- remove disproportions and overlaps in training specialists; optimize the lists of professions and specializations;
- carry out a structural and institutional restructuring of VET and professional education, optimize the network of educational institutions, develop models for the integration of initial and secondary VET and secondary VET and higher education; achieve a true multi-level character of higher education; create university complexes (associations) and educational research and production units;
- encourage co-founding and multi-channel financing of VET and professional education institutions; adopt competition-based and contract-based mechanisms of financing educational institutions; ensure the implementation in full measure of the provisions of the RF “On Education” related to the autonomy of educational institutions;
- actively use technologies of open education, information support of education and optimization of teaching methodologies; increasing the amount of those that contribute to the formation of practical

- skills of information analysis and self-learning and raise the role of students' independent work;
- in higher education – increase the share of integrated and interdisciplinary programs and their integration with cutting edge high technologies;
 - raise the status of university research as a major factor of quality training of specialists, development of productive forces and as mechanism of a continuous renovation of professional education; integrate university, academic and sector science;
 - adopt the Presidential Program for “Russian Universities” and provide state support to leading scientific schools;
 - form conditions for continuing professional education of personnel, ensure continuity of different levels of professional education and create an effective system of supplementary professional education;
 - create a legal framework ensuring active involvement of employers and other social partners in VET and professional education, including development of standards, setting targets for institutions of VET and professional education, contract-based training and human resources policy on the level of the RF Subjects;
 - reform the system of military training, organize general vocational training of retired officers in the field of engineering, social-economic and humanities occupations, primarily at civilian secondary VET and higher education institutions; create cross-university military departments for training retired officers.
 - to encourage research activities among university faculty, their financial support must be increased, including competition-based grants. (The State Council of the Russian Federation, 2002)

In connection with teacher qualifications and the training of the trainers:

Improvement of teachers' professionalism:

- to bring the standards of pre-service teacher-training up to requirements of the new century, an all-round reform of pre-service teacher-training development and pilot testing of new models must be performed, including its organization, structure, content, principles of interaction with practical training and innovations in education; quality of pre-service teacher training for initial and secondary VET must be improved;
- the system of upgrading educators' qualifications must be reorganized and teachers must be allowed to choose in-service teacher-training institutions to take upgrading courses;
- the State must cover the costs of up-grading qualifications (each education worker must be entitled to a course once in 5 years);

- all educational administrators and education workers must be provided with training in IT (as of now, only one fourth of them are “literate” in IT);
- methodological services within educational administrative bodies must be reorganized into a network capable of marketing advanced educational practices, creating a ramified infrastructure of pilot sites, laboratories of innovative practices, and workshops at innovative educational institutions;
- an effective system of pre-service and in-service training for education administrators must be set up, and a standard scheme for their certification and procedures for applying for job vacancies must be approved;
- the number of targeted presidential scholarships (grants) to support young gifted teachers must increase considerably.”

Other tasks include improvement of the quality of pedagogical research to bridge the gap between theory and practice and eliminate overlaps in the activities of research institutions, development of new models of practice-oriented research projects and a targeted financing for prospective practically-oriented research. The sector “Teacher training in North-West Russia,, as a part of a pilot project⁶⁴ of the European Training Foundation has already developed some concrete suggestions for the reform of the teacher education in the field of VET (ETF, 2002).

In the region of St. Petersburg, in the year 2000: 1,036 teachers worked in general subjects, 568 teachers in vocational theory and 2,212 instructors. 95.4% of the teachers and 27.7% of the instructors have a diploma in higher education. For teacher education in general it is planned that one teacher should be sent out to get further education courses and, afterwards, should give his or her knowledge to some colleagues to save high costs. Usually every teacher should get 2 to 5 days of further education per year. Language teachers, of course, get more days to gather practical experience abroad. Instructors get the opportunity to do up to a half a year of practical experience in an enterprise of the respective field. The ministry of education sponsors those teachers who actively take part in further education.

Members of the project “VET reform in North West Russia” have developed a foundational paper based upon a feasibility study on the strengthening of vocational teacher training and retraining and dealing with

⁶⁴ The Pilot project “Vocational Education and Training Reform in North-West Russia” is one of the biggest projects into which the European Training Foundation together with seven EU countries invested substantial resources.

professional standards for teacher education in the VET sector, which states that teacher qualification in the VET sector should ensure:

- The integration of both the theoretical and practical parts of the profession.
- Conform the method of teaching to the quality and level of the students' educational background.
- Harmonization of the demands of the basic educational standards in the field of the profession and the standards of the profession in the labor market.
- Teaching based on the real demands of the labor force, and being prepared to deal with further education and retraining.
- Determination of differences between the level of qualifications.
- Using international standards when describing professional demands.

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Chapter 10

TVET TEACHERS AND LECTURERS IN TURKEY

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1. HISTORICAL DEVELOPMENT OF THE VOCATIONAL AND TECHNICAL TEACHING PROFESSION

This chapter covers the professional situation of Turkish technical-vocational educators. The professionalization process of Turkish TVET teachers is, from a historical view, related to the developments in the TVET system of the country. Later, technical teacher training programs are presented and also secondary and high level technical schools are introduced. Finally, the practice of teaching, state of the art and future perspectives of TVET educators' professionalization is given.

The history of vocational and technical teaching can be divided into two main periods, the Ottoman and the Republican, in modern Turkey.

1.1 Vocational and Technical Teaching in the Ottoman

Akhism, which started to be established in the Ottoman Empire in the 13th century, was an organized brotherhood related to trade guilds. In this organization, people were taught certain crafts. Akhism functioned as a vocational school at that time. Turkish craftsmen were mainly educated in this institution. Not only was the knowledge of the craft passed on, but also the special type of ethic and culture.

With the establishment of the Ministry of Education in 1857, vocational schools were opened and a new curriculum was introduced. But they were still run by local governments. Higher education of vocational and technical teaching was directly attached to the Ministry of Education in 1869. New technical and trade schools for boys and girls were established in the second half of the 19th century. Mithat Pasha played a leading role in this respect. First, he opened a reformatory in Nis in 1861, and then he established technical schools for boys in Sofia and Ruscuk in 1864 and in Istanbul in 1868. Concerning technical schools for girls, Mithat Pasha was also active in establishing the first reformatory for girls in Ruscuk in 1865.

1.2 Republican Period

After the establishment of the Turkish Republic, the new elite launched an ambiguous project to reform the entire educational system in Turkey. Educationalists from Europe and the USA were invited for this purpose. John Dewey (1924), Kühne (1925), Omar Buyse (1926), Jung and a group of American educationalists came to Turkey (1930). Their research and reports had a great effect on the development of Turkish vocational and technical education.

Dewey, for example, suggested establishing vocational schools right after the primary school in order to educate the students for trade and other economic activities. Kühne also suggested establishing technical schools while he emphasized the importance of technical skills for the development of the new Republic. He also suggested a new program for training teachers. One of the interesting suggestions from Omar Buyse was to establish a labor university, which would lead to the industrial development of the country.

Along with these foreign experts, Turkish intellectuals and educationalists such as Mustafa Kemal Atatürk, Ziya Gökalp, Ismail Hakkı Baltacıoğlu, Ismail Hakkı Tonguc and Rüstü Uzel also played leading roles in the reform and restructuring of the educational system in Turkey.

One of the most important problems Turkey faced at the beginning of the Republic was illiteracy. The illiteracy rate was very high particularly in rural areas. In order to overcome this problem and to increase productivity, a new plan was developed by Atatürk, Saffet Arıkan (Minister of Education) and Ismail Hakkı Tonguc (General Director of Primary Education). The idea was to establish teacher colleges where vocational and technical education would be given in rural areas. Ismail Hakkı Tonguc, who was the founder of the Village Institutes, tried to change the economic structure of Turkey via education. Within this framework, the village institutes were established in 17 April 1940.

Primary school graduates (boys and girls) from villages were eligible to attend village institutes. The institutes were boarding schools and they were free of tuition fees. The institutes practiced the concept of mixed education. There were 21 institutes all over Turkey in 1948. Until 1950, over 500.000 village children benefited from these institutes.

The Village Institutes represented a populist, democratic and scientific educational system. They were part of the modernization of Turkey. The aim of the institutes was to create modern villages via education. The students of the institutes (boys and girls together) built their own schools, cafeterias, dormitories, etc. alongside with their teachers.

The village institutes were the result of a socialist approach to the question of development. Their aim was to train peasant youth as the leaders of rural development. They did not aim to raise intellectuals. The graduates could work as their own teachers, government health officials and midwives. As a result of this education, villages started to have teachers as well as health officials and midwives. Between 1938 and 1952, 17,373 students became teachers and 1248 became government health officials.

The teaching program contained three main branches: general education, agriculture and technical practices. Besides mathematics, science, history, geography, etc., students were taught how to repair tractors, how to maintain waterlines, etc. After a five-year education program, the government provided them land, a house, and basic technical instruments in order to keep them in rural areas. These new graduates could show their knowledge to peasants by doing different jobs in the village. This approach created a kind of solidarity between the graduates and the peasants. Most importantly the graduates, became a living examples for the people and showed them the possibility of upward mobility.

In 1943, the Ministry of Education established a Higher Village Institute in Hasanoglan in order to educate teachers, traveling headmasters and inspectors. Arts, building, animal care, agriculture, economics, etc. were taught. The graduates of the institutes not only worked as teachers but they also became artists, politicians, and scientists, and contributed to the development of the country in many respects.

2. TEACHER PROGRAMS FOR VOCATIONAL AND TECHNICAL SCHOOLS

Technical schools and institutes have been the most important forms of vocational schools in the Republican era. Technical Institutes were designed for five-year programs, three years for secondary education, and two years for high school education. Secondary education in the institutes was

cancelled for the 1974-75 educational year. The high school part of the Institutes was converted to vocational schools.

In the 1974-75 educational year, technical lycées were established and they have continued to train qualified labor for middle levels. Technical schools and institutes for girls, which aimed to raise well-educated mothers and qualified labor, were also converted to vocational high schools in the same year. The backbone elements of vocational and technical education in the Turkish Republic are vocational, girl's vocational and technical high schools. The teacher-training program for vocational and technical schools aims to train teachers for these high schools. Male and female technical teacher colleges were established at the beginning of the Republic. The new Republican regime gave a great deal of responsibility to teachers to protect and develop a secular, democratic, and progressive structure in Turkey. As a result of this task, new teacher programs for vocational and technical schools were designed. In this framework, on the one hand, some students were sent to European countries for education and on the other hand teachers from European countries were brought to Turkey. Between 1927 and 1937, 133 students (male and female) were sent to Czechoslovakia, Switzerland, and Italy. In order to fill the vacuum of teachers in different schools, foreign teachers were brought to Turkey: 6 for fashion, 4 for cutting clothing, 3 for household economy, 2 for technical drawing, 1 for foreign language, 2 for plumbing, 1 for male tailoring, 1 for trade, 10 for carpentry, 5 for blacksmithing, 2 for electricity, 1 for architecture, 4 directors, etc.

2.1 Male Technical Teacher Colleges

Omar Buyse suggested in his report that technical teacher schools should be established. The school was established in Ankara in the 1937-38 educational year. It was a three-year boarding school. Later in the 1946-47 educational year, a program at the College was revised and it became a four-year higher college. Its name was also changed to the Technical Teacher College. In 1962, it was re-named the High Male Technical Teacher College. The college trained teachers for secondary education in vocational and technical schools.

2.2 Female Technical Teacher College

In the 1934-35 educational year, in order to train teachers for vocational courses, Female Technical Teacher Schools were established for two years. The duration of education (three years) and the number of specialties were increased in the 1938-39 educational year. In 1947-48, the duration of

education was increased to four years and in the 1961-62 educational year, it was renamed as the High Female Technical Teachers College.

These teacher colleges were attached to the Ministry of Education until 1982. The Ministry provided for all the needs of the colleges, such as personnel, building, technology, etc. In 1982, these teacher programs were transferred to the different universities under the framework of the Higher Education Council Law.

Teacher Training Programs, which were under the control of the Ministry of Education until 1982, were attached to the universities and with the Higher Education Council Law, 2,547 new faculties were formed. These programs were called the Faculty of Technical Education (Technical Teacher Colleges), the Faculty of Vocational Education (Female Technical Teacher College), the Faculty of Industrial Vocational Education and the Faculty of Trade and Tourism Education. Faculties of Technical Education are the main source for the education of teachers in these areas and they numbered 18. Today, the number of Faculties is higher than actually needed.

In all of these institutions the programs were not only affected by internal dynamics but also by the European and American vocational and technical education programs which have been used as models. French, German and other European educational systems were used as models in the Ottoman Empire. German, American and other European systems followed in the Republican period. Not only the design of teacher training programs but also buildings, techniques of teachings, etc. have also been used as examples to be followed.

In the course of history, educationalists from European countries and the USA were invited to Turkey in order to help restructure the Turkish educational system. John Dewey (1924), Kuehne (1925), Owen Buyse (1926), Jung and a group of American educationalists came to Turkey (1930) in the beginning of the Republican era. Their researches and reports had great effect on the development of Turkish vocational and technical education. When opening the Higher Technical Teacher Colleges in 1937, these reports were used.

Along with these foreign experts, Turkish intellectuals and educationalists such as Mustafa Kemal Atatürk, Ziya Gökalp, İsmail Hakkı Baltacıoğlu, İsmail Hakkı Tonguç and Rüstü Üzel also played leading role in the reforming and restructuring of the educational system in Turkey. They emphasized the importance of determining the needs of the country. They believed that education had to be designed in order to fulfill these needs. Atatürk and other experts also had a very ambiguous modernization project for Turkey and industrialization and technical education were important parts of this project.

While teacher training in machinery, metal, fitting, electrical and carpentry were important at the beginning of the Republic; new branches were opened in the 1970s due to growing industrialization in Turkey. Today teacher training is provided in many subjects such as construction, machinery, metal, automotive, weaving, textile dying, textile technology, computer sciences, electronics, automation, communication, carpentry, banking, insurance, tourism, stock exchange, accounting, agriculture, etc.

As a result of rapid industrialization, the number of occupations has increased and the occupational structure has diversified. Although there are some differences between Turkey and Europe and the USA concerning vocational and technical teacher training programs, Turkey tries to make programs compatible particularly with the developed countries such as the European Union nations, Japan and the USA.

There are not very great differences among vocational and technical teachers in respect to their quality since they all received their education at the faculties. The location of the faculties determines which branches are going to be opened and the specialization of the students. But material conditions, possibilities or impossibilities and ability, capacity and the number of the educators create differences among specialized areas. Faculties of Technical Education, which have involved the Higher Education Council-World Bank Industrial Education Projects, have better technological means; their teaching staffs do more research abroad. These factors make the graduates of these faculties more successful in the labor market and put the faculties in a higher position compared to others.

Although vocational and technical specialization, location, possibilities etc. create differences among graduates, a common curriculum balances these differences. The real source of difference is international cooperation and connections. It is safe to say that the subjects as well as the teachers of computers, electronics, mechatronics, and textiles are favored by the Ministry of Education and as qualified manpower in the industry.

Teachers are considered the vanguards of the modernization of the Republic. They have generally been well paid and much respected. But beginning in the 1970s, teaching as a profession started to lose its higher status due to the deterioration of teacher wages and working conditions. High population growth, poor physical conditions of schools, and low wages has become the main obstacles to professionalization of the teachers. The inability to adopt scientific and technological developments into the education system, red tape and teaching too many classes have also contributed to this process. Most of the schools are run by the state and the Ministry of Education employs most of the teachers in Turkey. Although the Ministry desires to provide in-service training for teachers numbered around 600,000, it has not opened sufficient programs for this purpose. The General

Directory of In-service Training attached to the Ministry of Education maintains the in-service training. But in recent years, the Ministry has sent some teachers, particularly vocational and technical teachers abroad, in order to increase the quality of education in these areas. The Ministry has also supported teachers who wanted to attend different kinds of MA programs at the universities.

3. PROFESSIONAL ASSOCIATION

The first syndicate of Turkish teachers, The Teachers Association, was formed in the last period of the Ottoman Empire in 1914. The aims of this organization were to meet the scientific and social needs of the teachers and through those, to improve the living quality of the public. Actually the first central, extensive and massive professional association of teachers to participate was the Turkish Teachers Union, which was established in 1921. Between 1946 and 1960 another organization, namely the National Federation of Turkish Teachers Union (FTTU) organized the teachers. This organization supported the government's rights rather than those of teachers. In this period, many other small and regional organizations were formed as alternatives to the FTTU. The new Turkish constitution, which has been in effect since 1960, radically improved fundamental rights and liberties, and caused the FTTU to change its politics. In 1965 the first teachers' syndicate Turkish Teachers Syndicate (TOS), was established and took control of the FTTU. In the 1960's, until it was sued by transient military regime courts in 1971, the TOS had made efforts to improve the position of teachers and conditions in schools in the whole country. Before the regime prohibited the TOS, a new association, the All Teacher Coalition and Solidarity Association (TOB-DER) was established and replaced the TOS. In 1980, another military regime caused the TOB-DER to disband. Until 1986, there were no teacher's organizations. In this year, the Educators' Association (EGIT-DER) was formed and tried to replace the TOB-DER. In 1990, many teacher syndicates were established as since 1971 it was allowed for teachers to organize themselves into syndicates. Today, the largest education syndicate, EGITIM-SEN, continues syndicate activities to improve the social and personal rights of teachers and support their professional developments. In addition, syndicates also participate in the democratization process of the country.

However, vocational and technical teachers do not have field-specific unions and they can be a member of one of these unions, depending on their own thoughts and desires, or continue their duties without being a member of any of them.

4. FIELDS OF EMPLOYMENT AND OCCUPATIONAL PROFILES AND QUALIFICATIONS IN TVET

Teachers in technical and vocational secondary and high schools are trained in Education Faculties in Turkey. In short, the sources for teachers in professional and technical schools are these faculties. However, from time to time, engineers from different areas are occupied as teachers to cover needs in education. The engineers are trained for a period according to their formation; they began giving theoretical (in classes) and practical (in workshops and laboratories) lectures. In fact, any kind of teaching is accepted as a special and sacred job in Turkey. Teacher candidates accepted to teacher training programs until 1982 were given a two-step examination regarding ability-competence and knowledge-physical characteristics.

The essence of the Turkish National Education Law is that “the main thing in the profession is to teach”. Consequently, vocational and technical schools have been managed for many years by teachers participating in many levels of administrative duties, from chief of workshop or school directors, to general managers of National Education Minister Branches. Recently, teachers who meet special criteria have the opportunity to be charged as a manager. However, in recent years, some definite criterion have been required from teachers to be a manager in any rank. Teachers with masters and/or PhD. degrees have a higher chance than others. Unfortunately, also being politically involved is one of the most important criterion needed to have a place in one of the management positions.

The promotion of vocational and technical teachers is the same in the other branches of teaching: 1 rank every working year and 1 degree every three years. Other teachers begin their profession with the 1 rank of 9 degrees in the state schools. TVET teachers begin 1 rank of the 8 degrees as engineers and the final highest position is the 4 rank of the 1 degree. While the other branches of teaching give 15 hours of obligatory courses for a salary, TVET teachers give 20 hours of obligatory courses. 20 hours of paid courses may be given. Teachers may take the fee out of their salaries: 20 hours in a week and 80 hours in a month. The uppermost limit for retirement is 65 years age. The lowest limit is 58 for women and 60 for men.

Turkey has an overall population of 65,000,000. 70 % of this population is below 35 years of age and demands education. The number of young people who demand education is great. The government recognizes the necessity of vocational and technical education and announced it to the public and by establishing the sources for technical and vocational education; it has tried to produce high quality work and the brainpower required by the country. In this phase, vocational and technical teachers have

a great responsibility. However, when this matter is considered from a socio-economical point of view, the fees of the Turkish teachers are lower when compared to western countries. Teachers try to train themselves socially and are accepted as leaders, especially in small towns. Also, they participate in many activities and arrange various activities.

According to the 2002-2003 academic year data, there are 3,575 vocational- technical teaching schools in Turkey. A total of 71,828 teachers work in these schools: 26,494 women and 45,334 men. In these schools, there are a total of 981,224 students: 357,938 girls and 623,286 boys.

The main source of TVET teachers in Turkey consists of Technical Education, Vocational Education and Industrial Arts Education Faculties. The teacher candidates who graduate from these faculties take the Public Personnel Selection Examination (KPSS), and the successful ones are then assigned to positions. These young teachers work as apprentice teachers under the consultancy of a titled and experienced teacher for one year and gain experience in workshops, in the laboratory and in courses. At the end of the academic year, if they are agreed to be sufficient by the teachers' meeting, under the presidency of the principal, their "apprentice" title is removed and they continue their career as a long-term teachers. Teachers (lecturers) in vocational and technical schools also give lectures in Vocational Colleges if they have master or doctorate degrees.

Some TVET teachers continue their education in graduate programs. They go on to join masters' degree programs with or without a thesis. Some vocational technical education teachers work as managers and instructors in the human resources or in the educational departments of industries or factories. In short, technical and vocational teachers work not only as teachers but also as technical staff or instructors in industry. They may later return to their teaching profession until 30 years of age if there is a gap.

For the purpose of better understanding the TVET Teacher Education, it is necessary to focus on the following:

42. Technical Education Faculty Student Admission

43. Properties of Technical Education Faculties

As described in previous chapters, the teacher candidates who would be accepted to teacher training programs were subjected to general ability and special ability exams and their physical properties were carefully examined. But after 1982, with the Higher Education Council (YOK) law, all of the institutes that train teachers were collected under one roof and the teacher candidates were accepted into the programs by a centralized exam. The candidates who had sufficient points were accepted without their personal properties being known. Though some changes occurred, vocational and technical school graduates and general high school graduates in lesser

numbers could join TVET programs. They have generally been registered in programs that train teachers in their own branches.

It is impossible to say that the physical and technological opportunities of Technical Education Faculties (currently 18 in number) are sufficient. Three faculties have gained technological support under the first and second Higher Education Council-World Bank Industrial Education Project coverage and the teaching staffs are provided with in service training. These institutions are also able to improve their laboratories through this project.

Teaching staffs of Technical Education Faculties are the graduates of those Faculties and Engineering Faculties. In each Technical Education Faculty, Education Science Departments also exist. Education Science Departments support education courses within the curriculum. In the last years, importance has been given to training teachers from every department (computer, electronics, mechanics etc.) as research assistants so that educational consciousness is based on a profession in addition to general education.

Technical Education Faculties offer bachelors' degree programs. The duration of education in these faculties is four years. Teacher candidates get pedagogical courses beginning in the first year and continuing throughout their 4-year education and then they graduate as teachers. If it is required by the system and if they so desire, the graduates are assigned as teachers to vocational and technical high schools managed by the Ministry of National Education. Otherwise, the graduate may find and work in the industry in various positions. The same structure and system were also valid in other educational faculties until the latest application, when, in 1998, these faculties began to realize masters' level education (without thesis). In Technical Education Faculties, pedagogic formation courses in curriculum are given from staff of the education department and vocational courses from their own departments within the four-year education period. In addition, they take other courses such as History of the Turkish Revolution, Turkish Language, Second Language (English, German, French); Science courses; Physics, Chemistry, and Mathematics.

Teaching staffs of Technical Education Faculties are also research assistants, instructors, assistant professors, associate professors and professors in other institutions of higher education.

It can be observed that from the 1920s until today, the curriculum of Vocational and Technical Education Teacher Education Institutes have changed continuously. The reason for such changes is sometimes political and sometimes the result of scientific and technological developments. In the Turkish Republic, teachers have always been accepted as the architects of the society and as leaders. However, because of the planning problems sometimes the number of teachers became too high or insufficient and in

some faculties the problem of quality occurred. As mentioned above, the curriculum of the Technical Education Faculties consists of four sections:

- Technical Courses
- Education Science Courses (pedagogic formation)
- Science Courses
- Humanities Courses

In some departments of Technical Education Faculties, there is a one-year preparatory class for foreign language education. The percentages of these curriculum sections for credits and class hours are shown in table 10-1.

Table 10-1. Structure of teacher education curriculum

Course Structure	Hours in Curriculum (%)	Credits in Curriculum (%)
Technical courses	64.2	62.2
Education Science courses	16.8	15.2
Science courses	10.8	12.8
Humanities courses	8.2	9.8

Even these ratios changing from department to department may give a general idea. Education science courses have lower percentages of the curriculum. As teaching is an important profession, these rates should be reconsidered depending on the global developments. From 1920 to 1990, it can be observed that similar courses were included in the programs of the teacher educating schools with some title and credit changes. In 1991, through the Higher Education Council and World Bank Industrial Education Project, a new pedagogic formation program (teacher education program) was introduced which continued until 1998. Table 10-2 shows the education courses in technical education curriculum, which were given between 1991 and 1998.

Starting in the 1998-1999 academic years, the courses shown in table 10-3 were applied for the education science part of the curriculum. These changes were made together with foreign experts in Turkey under the coverage of the first and second Higher Education Council and World Bank Industrial Education Projects. The effects on the education programs and their content by the European countries and America have been taken into account.

The education science courses shown in Table 10-3 are obligatory for the Education Faculties that educate teachers in every level and field. The program in Table 10-3 is currently carried out in the technical education faculty, because a teacher education program does not completely meet the requirements of the technical teachers or is not sufficient for vocational and technical education. However, the program in Table 10-2 seems more

appropriate with regard to vocational and technical teacher education curriculum.

Table 10-2. Education courses in technical education curriculum

Courses	Theory-Application-Credits	Term
Human Relations	2-0-2	1
The Principals of Technical & Vocational Education	2-0-2	2
The Individual and Learning Process	2-0-2	3
The Learner and The Group Process	2-0-2	3
Job Analysis and Program Development	2-0-2	4
Practice and Vocational Lesson Teaching Methods	2-0-2	4
Measurement and Evaluation in Education	2-0-2	5
Educational Technology	2-0-2	5
Micro Teaching	2-0-2	6
Vocational Guidance	2-0-2	6
Educational Administration	2-0-2	7
Teaching Practice	2-4-4	7/8

Table 10-3. Courses that were applied for the education science part of the curriculum

Courses	Theory-Application-Credits	Term
Introduction To Teaching	3-0-3	1
School Practice 1	1-4-3	2
Development and Learning	3-0-3	3
Planning and Evaluation in Instruction	3-2-4	4
Instructional Technology and Material Development	2-2-3	6
Class Management	2-2-3	6
Special Teaching Methods 1	2-2-3	6
School Practice 2	1-4-3	7
Special Teaching Methods 2	2-4-3	7
Guidance	3-0-3	8
Teaching Practice	2-6-5	8

When designing the curriculum and deciding on courses as well as defining their contents, it is necessary to refer to the contribution of everyone who benefits from and is affected by this program instead of leaving it to the discretion of a few people. The national culture of countries should not be overlooked nor should the international standards of developed countries when preparing programs training teachers. Neglecting the potential of the history of Turkish education is a real loss for Turkey. The Turkish culture has a valuable backlog in terms of an educational tradition. The organization of the educational environment, communication, study habits, democratic discipline and mentality and seeing love and respect as main elements of education have had a great influence from the Ottoman Era up to today.

5. PRACTICE OF TEACHING AND INSTRUCTION AND PROFESSIONAL REALITY WITHIN THE INSTITUTIONS OF TVET

In this chapter, schools and centers in which technical and vocational teachers work and their transition to the profession level are explained. At the secondary level, there are three main types of TVET schools; industry-oriented Vocational and Technical Lycées, non-industry-oriented Female Vocational Schools and trade sector-oriented Trade and Tourism Lycées. In these schools, the TVET duration of education varies from 3-5 years. Some schools offer 1-year preparation classes in foreign languages (English, German, French and Japanese). In this case, the duration is 1 more year and they are called Anatolian Technical/ Vocational/ Trade and Tourism Lycées. A complete list of programs offered by secondary level TVET schools is shown in table 10-5. In addition, there are various secondary level TVET schools; imam and preacher education, health education, special education, vocational lycées in various fields attached and related to Ministries and a small number (11) of private vocational lycees.

5.1 Industrial Vocational Lycées

Industrial vocational high schools were established in order to answer the industrial needs of the country and train technicians for the industry. The first industrial school, called reformatories were established in Nis. In 1912, Industrial Schools (Mektebi-i Sanayi) and Technical School (Sanatlar Mektebi) in 1923 were first joined together and called Area Technical Schools (Mintika Sanat Mektebi) in 1931, and then in 1935, Regional Technical Schools. Regional Technical Schools were attached to the Ministry of Education. These schools were renamed as Male Technical Schools in 1948. The curriculum was restructured into 3-year Technical Secondary School and 2-year Technical Institutes.

Male Technical Institutes were actually part of the primary school system. The institutes started to accept students from secondary education in 1943. In 1959-60, the institutes became part of the secondary educational system. Male Technical Institutes were renamed as Industrial Vocational Lycées in 1974-75. Industrial Vocational Lycées aimed at training skilled manpower for industry. The duration of education was three years. Some schools offered 1 year foreign language preparation classes and were called Anatolian Vocational Lycées.

5.2 Technical Lycées

In order to answer the need for technical services, Conductor Schools were opened in 1911 modeled after the French *Ecole de Conducteur*. The schools were renamed as Public Works Schools in 1926. The duration of education was two and a half years but was increased to three years in 1930. These schools were closed down and reopened and their names changed many times before 1969, when they were re-named Technical Schools in 1969. They were reformed as Technical Lycées in 1974-75. The technical Lycée four-year curriculum in medium level technical schools is designed to train technicians and students for higher technical education. Schools with foreign language preparation classes are the Anatolian Technical Lycées and are 5-year programs.

5.3 Female Vocational and Technical High Schools

Female vocational education is based on the idea that these institutions would train modern housewives and provide certain skills for the market. In these schools, boys are also educated in certain programs. The first female vocational school was opened in Ruscuk, in 1864, and was called a "Reformatory." Later, the Artillery School opened a branch called the Female Industrial School, in 1869, in order to teach women to sew underwear for soldiers and to make bandages. Although many Female Industrial Schools were opened in different parts of the Empire during the Tanzimat era, many of them were closed down and only the school in Istanbul functioned until the beginning of the Republic. These schools were renamed as Female Vocational Schools in 1923 and they converted to Female Institutes in 1927. In 1974-75 they were renamed as Female Vocational Lycées and their teaching program was reformed for three years, and Female Technical Lycées (4 years). Female Technical High Schools aim to train technicians and students for higher technical education, and the duration of education is four years. Schools with 1-year foreign language preparation class are called Anatolian Female Vocational Lycées and Anatolian Female Technical Lycées.

5.4 Trade and Tourism Lycées

Trade and Tourism Lycées were established to train manpower for the tourism and trade sectors of country. The duration of education is 3 years, and, in schools with preparatory classes, 4 years.

5.5 Multi-Programmed Lycées

Multi-Programmed Lycées provide general and technical programs for three years and they are established in smaller settlements where the population is small and scattered.

5.6 Other Schools

Other than the Lycées mentioned above, other vocational and technical schools are summarized in Table 10-4: these numbers of secondary level TVET schools, students and teachers are shown.

Table 10-4. Data of TVET schools in 2002-2003 educational year

Secondary Level TVET Schools	Number of Schools	Number of Students			Number of Teachers	
		Total	Boys	Girls	Male	Female
Vocational and Technical Lycees	1239	429680	384573	45107	31197	
Female Vocational and Technical Lycées	646	166381	29238	137143	12779	
Tourism and Trade Lycées	804	275873	155545	120328	14440	
Imam and Preacher Lycées	536	71100	42853	28247	7431	
Special Education Lycées	15	608	462	146	97	
Anatolian Health Education Lycées	3	329	38	291	35	
Private Vocational Lycées	11	936	620	316	57	
Vocational Lycées attached to various ministries	321	36317	9957	26360	5793	
					45334	26494
TOTAL	3575	981224	623286	357938	71828	

5.7 Apprenticeship Training Centers

Training of apprenticeship, journeymen and masters has always had a special place in Turkish industry. The apprenticeship system is organized into a formal education system. Students are trained theoretically in the Apprenticeship Training Centers and practically in firms. In these centers

178,389 boys and 21,639 girls are educated, according to the data from the Ministry of National Education.

5.7.1 Public Training Centers

Public Training Centers are an important part of non-formal training activities offered by the Ministry of National Education. In the 2002-2003 educational year, in 922 centers, 464,366 adults were enrolled (197,303 male and 267,063 female) in 13,043 vocational courses. Beside vocational courses those centers also offer literacy, social, and cultural courses.

5.8 Vocational Colleges

Vocational High Schools were established to answer the needs of medium-level qualified labor in industry. In addition to high-level qualified labor (engineers, directors etc.) and lower level labor (workers, master etc. medium level labor, technicians and technical specialists) are also educated in these institutions. In the 1950s, Technical Schools as vocational high schools were established for the first time in Republican history. Based on the decision of the Ministry of Education dated 1st of April 1953, technical schools were opened which were based on the male vocational and building institutes. At that time, technical schools provided education for 2 or 3 years. The 1950s can be defined as the beginning of rapid industrialization in Turkey. Higher education was not able to answer the needs of this industrialization. As a result of this, vocational high schools came onto the agenda of the Ministry. On the 6th of November 1981, these schools were attached to the Institute of Higher Education. Vocational colleges are pre-bachelor schools and graduates of these schools can continue in related bachelors programs after being successful in the Vertical Transition Exam (DGS). With an amendment made in 2001, graduates of vocational and technical Lycées can continue their higher education in Vocational Colleges without taking university entrance exams.

5.9 Initiation of Technical Teachers to Profession

The teachers who graduate from the Technical Education Faculties have access to work in secondary level TVET schools. The teacher candidate who graduates from the faculty must take the Public Personnel Selection Examination (KPSS) and achieve a minimum of points, defined by his/ her field. Then they will be appointed to the vacant positions and, if there is any demand from the institutions, he/ she will be assigned as a teacher without needing industry experience. These young teachers work as apprentice

teachers under the consultancy of a titled and experienced teacher for one year and gain experience in workshop, laboratory and courses. At the end of the academic year, if they are agreed to be sufficient at the teachers' meeting, under the presidency of the principal, their apprenticeship is ended and they continue their careers as long-term teachers. Teachers in Vocational and Technical Lycées can also give lectures in Vocational Colleges. In this case having a masters or doctorate degree is preferable.

Teachers at every level, at Technical Vocational Lycées and at Vocational Colleges, are responsible for giving vocational courses in theoretical and practical areas. For this reason, they carry out theoretical and practical courses. They are responsible for making all the scientific preparations according to their plans. For instance, they have to prepare practical training environments in the laboratories, workshops and benches. They have to prepare instruction plans for courses on a daily, weekly and yearly basis suitable to the curriculum and must deliver the contents of their courses according to these plans.

The teachers must perform their duties depending on their vocational knowledge as well as on their attitudes towards teaching and the abilities that they gain over time. They also have to improve and update themselves according to the scientific and technological developments, improve their general culture and discover the learning potential of each individual.

It is generally thought that the teachers, as graduates from technical education faculties are educated adequately to teach in technical and vocational high schools. However, crowded classes, out of date technological equipment in laboratories, and insufficient learning and teaching materials all affect the quality of education. Another important problem in Turkish Vocational Schools is that almost all technical teachers do not have real industrial experience. It is also true that most of the students who successfully graduate do not intend to become teachers, as the salaries of teachers are very low. Instead of teaching, they prefer to work in an industry with better salaries.

In development of programs for Vocational and Technical high schools, vocational and technical teachers do not join in the program development studies in conformity with the development principles of education programs; however, this does not mean that the programs are developed completely without teachers. Before the programs are tested and applied, the teachers may attend instructive courses to understand the application more consciously.

However, the ministry desires to base the program for developmental studies on scientific and social conditions and wants teachers to participate in these research and development studies more actively. The situation is almost the same for the faculties and higher vocational schools. Especially

the education science courses and programs are, in particular, determined and developed by the Higher Education Council. In the development of field courses in curriculum, the instructors take more responsibility and the courses are determined according to need and the programs are developed accordingly.

The relationships of the technical teachers and faculty instructors with the industry are not at the desired level and this is a weakness in those schools. There is not any systematic co-operation between schools and regional players such as HRD-Professionals and employers etc.

The inspectors from the Ministry of National education are responsible for inspecting vocational and technical schools and their teachers. The inspectors act both as judge and public prosecutor. After their visit to the schools they are responsible for evaluating and writing reports. Inspectors may punish or award the personnel of schools. A teacher who does not commit an offense may work until he/ she retires. There is no academic ranking for teachers; in time everybody may advance to the same rank. But completing graduate education gives advantages for rising in the system. Teachers are encouraged by principals of schools to complete graduate studies. The percentage of teachers who have completed graduate education is not known but is estimated as being low.

Some teachers may attend in-service training programs organized by the Ministry of National Education. No sufficient support is given to teachers so that they can improve and update themselves. However, since 1997, the Ministry of National Education increased efforts and investments for the in-service training of TVET teachers. Some teachers, in limited numbers, are sent abroad for special purposes, mostly related to certain projects.

Unfortunately data does not exist on Technical and Vocational Teachers; they work in industry as trainers or in other jobs.

6. FUTURE PERSPECTIVES ON PROFESSIONALISATION AND CONCLUSION

TVET teaching professionals in Turkey are educated in vocational and technical education faculties. The Turkish Republic has had a rooted vocational and technical education and teacher educating system for the past several hundred years. It has always been important to educate vocational and technical teachers in teacher training institutions. But since problems have been observed in the national educational system for several decades, it can be said that the importance of education has lost its weight and its dynamics through the years. It is believed that in order to catch up in today's world, revolutionary resolutions must be taken in to account as in early

republican years. The problems of the TVET system cannot be dealt with alone. The following issues are problems of today's TVET teacher education system:

- The quality of teacher candidates and also of graduated teachers has decreased. Reasons for this are the following;
- Improper and insufficient management of the system and the schools at all levels,
- Low wages for teachers do not motivate the candidates, thus successful students don't want to become teachers and teachers are not enthusiastic to teach,
- Little involvement in school administration and teachers in politics and problems of discrimination,
- Insufficient planning of the demand for teachers in terms of numbers and programs causes wasting of resources and increases in the number of unemployed teachers,
- Curricula are not developed as often as needed to catch up with rapid changes in technology and education sciences due to bureaucratic and financial reasons,
- Candidates who are ready to be appointed to teaching positions are deprived of industrial experience and face problems when they teach in schools. This causes a decrease in the quality of education,
- Qualifications for TVET school programs are not specified. Standardization is necessary to educate students equally and correctly,
- TVET schools receive only a small share of the National Education Ministry's budget and only a small percentage of the national budget of the National Education Ministry.
- Accreditation of TVET teacher education programs is necessary to improve the education quality,
- Lack of co-operation between institutions (schools-faculties-industry-ministry),
- Changing the national education policy with each change in governments very often causes inconsistencies and an educational system, which does not operate properly.

In order to operate the TVET teacher education system properly, the specific problems mentioned above first need to be solved. All those who hold a stake should come to a consensus about an educational system that should not be changed with each new government. Funds for the TVET system and the ministry budget should be increased. The prestige of becoming a teacher should be raised to what it was previously.

Coordination between the institutions should be established. Standards for professions should be defined and the accreditation of TVET teacher

education should be put in practice. Studies and researches should be undertaken in order to find out the origin of the problems and to find solutions for them. Adapting new technologies at the appropriate time for TVET schools and TVET teacher education institutions and taking advantage of more information and communication technologies is necessary to bridge the gap.

Taking part in the European Union's TVET projects and realizing more regional co-operation has become necessary for the regionalization process in those countries and also for possible membership in the European Union in the future.

Table 10-5. Programs implemented in secondary level vocational technical schools

Vocational/ Technical Lycées (Mixed)		Vocational/ Technical Lycées (Girls)	Tourism and Commerce Lycées
Building Draftsman ship	Machine Shop	Book Binding	Accounting
Ceramics and Tile Making	Mapping and Surveying	Canning	Banking
Chemistry	Marble Technology	Ceramics	Communication
CNC Machines	Marine Electronics and Communication	Chemistry	Cookery
Computer Science (HW)	Mechanical Drawing	Child Care	Cooperative Operations
Computer Science (SW)	Medical Electronics	China Design	Cooperative Services
Ready Made Clothes	Metal Melting	Computer Science	Data Processing
Textile Machines Control and Instrumentation	Metallurgy	Decoration Plants	Design (Inner Spaces)
Cooling and Climatization	Metal Working	Design (Inner Spaces)	Electronics
Deck Fishing	Micro-Techniques	Embroidery	Hotel Management (Floor Services)
Decking	Painting Technology	Fashion Design	Hotel Management (Kitchen Services)
Decorative Arts	Pattern Making	Food Control & Analysis	Hotel Management (Guest Services)
Electricity	Plastic Arts	Glass Processing	Hotel Management (Reception Services)
Electro-Mechanical Conveyors	Plumbing	Graphics	Hotel Management (Travel Services)
Electronics	Printing (Type Setting)	Hairdressing	Insurance Services
Food Technology	Printing (Offset)	Handicrafts	Local Administrations
Foundry	Process Technology	House Management	Office Services
Graphics	Radio & TV	Illustration	Real-Estate Services
Heavy Duty Machines (Maintenance)	Restoration	Jewellery Design	Secretarial Services (Legal)
Heavy Duty Machines (Operation)	Rubber Technology	Leather Confection	Secretarial Services (Management. & Commerce)
Hydraulics and Pneumatic Industrial Electronics	Sea Products	Nourishment	Secretarial Services (Medical)
Infrastructure Jewellery	Shoe Making	Office Management & Secretarial Services	Stock Exchange
Journalism	Tea Technology	Pastry	
Leather (Ready Made)	Telecommunication	Ready Made Garments	
Leather (Technology)	Textile (Weaving)	Sculpturing	
Librarianship	Textile (Dying, Printing, Drafting)	Sea Tourism	
	Textile (Spinning)	Skin Treatment	
	Textile	Tailoring (Man)	
	Tool and Dye Making	Tailoring (Woman)	
	Upholstery	Textile (Weaving)	
	Weaving Technology	Textile (Dying, Printing, Drafting)	
	Woodworking	Textile (Quality Control)	
	Yacht Building	Textile (Spinning)	
		Tourism Industry & Servicing	
		Tourist Agency	
		Tricot ((Ready Made)	

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Chapter 11

PERSPECTIVES ON TEACHERS OF VOCATIONAL AND TECHNICAL EDUCATION IN THE UK

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1. INTRODUCTION

In any analysis of the professional development of technical and vocational education in the UK two important contextual factors need to be highlighted. The first is that the UK is made up of four nations, and while there are some similarities there are also historical and cultural differences. For example, Scotland has had control over its education system since the eighteenth century and the situation regarding education and training in Northern Ireland is also quite different. Furthermore, although educationalists used to talk about England and Wales when discussing education and training, since devolution in the late 1990s, Wales like Scotland has been given far more control over its education and training system. However, despite these national differences and the fact that I draw on statistics which are mainly drawn from England and Wales, many of the general arguments that are made do apply to the whole of the UK. The second important contextual factor is that unlike many other European countries the UK has not really provided separate courses for the training of vocational and technical teachers. Vocational and technical teachers follow the same training as academic subject teachers. Although some of the bigger providers try to give some subject support by clustering areas together, this

has at best been rather marginal. In most cases subject or vocational specialisation has been non-existent⁶⁵. Furthermore, teacher training for all teachers after school-leaving age has traditionally had no agreed-upon curriculum, no minimum entry requirement, and very little regulation from government. As a consequence, teacher education for all teachers in the further education sector has developed in a very ad hoc and uneven manner.

2. A HISTORICAL PERSPECTIVE ON THE PROFESSIONAL TRAINING OF VOCATIONAL TEACHERS

2.1 Vocational and Technical Education in the UK

Records from the nineteenth century concerning vocational education are very scant and unclear (McNair, 1944). There are difficulties in distinguishing between the terms ‘technical’ and ‘vocational’ education⁶⁶. Technical education is sometimes used to mean adult vocational education and sometimes to refer to technical education in schools. There are some records of public debates about technical education such as those conducted by the Board of Trade in 1851 (Bristow, 1970), but most were concerned with technical education in schools. By and large however, technical and vocational education was not considered or given any priority by central government until the 1944 Education Act (Bratchel, 1968; Barnett, 1986). The overall picture of nineteenth century technical and vocational education is one of fragmented, ad hoc and marginalised provision.

The dominant form of technical training in the UK during the nineteenth century was the apprenticeship, which was organised by independent employers and craftsmen with no public funds and little public regulation (Aldrich, 1999). It usually involved workplace training with little or no theoretical or academic study, and was distinct from mainstream educational provision (Ainley and Rainbird, 1999). As I have argued elsewhere (Green

⁶⁵ This is a topic of some debate at present in the UK and is being investigated by the body that inspects teacher training for the further education sector. There are also pilot teacher training schemes that focus on subject specialisms for teachers of Literacy, Numeracy and English for Speakers of Other Languages.

⁶⁶ I shall use these two terms interchangeably. Later in the chapter the term further education (FE) will be used which includes general, vocational and technical education and training.

and Lucas, 1999) the pattern of technical and vocational education, which developed in the nineteenth century, was not only institutionally marginalised from mainstream education; it was also intellectually adrift. Whereas in most of the more advanced northern European countries such as France and Germany technical education was closely allied to general education, in Britain a sharp divide grew between the two, separating skills and knowledge (Day, 1987). By comparison with the French system in the mid-nineteenth century, English technical training was a very minimalist affair. Its prototypical form was the employer-controlled apprenticeship whose archetypal product was the useful 'practical man' and whose main standard of quality was time served (Sheldrake and Vickerstaff, 1987).

The early twentieth century saw an improvement in secondary education and an expansion of adult evening schools (Bristow, 1970) and schooling for those leaving school at 14 (Bailey, 1990). However, the combination of a tradition of voluntarism,⁶⁷ economic depression and public expenditure cuts after 1926 ensured that little advance was made in vocational and technical education and training (Frankel and Reeves, 1996). The attitudes of employers to training reflected the suspicion towards further education, established in the previous century, that practice is best learned in the workplace and that theoretical learning for young people resulted in their being less adaptable to 'the rough and tumble of industry and to understand more fundamentally the outlook of workmen' (Richardson, 1939, p.473).

There was rapid growth in vocational and further education after the Second World War as troops returned home requiring training for civilian life. Alongside technical colleges, adult education institutes were established which catered for part-time academic, vocational and leisure activities (Peters, 1967). However, the birth of technical colleges as we know them in Britain came into being in the form of 'further education', a term introduced in the Education Bill of 1944 to describe what would follow the new notion of secondary education. This was an indication of the continuing marginal nature of the technical and FE colleges, compared with the emphasis given to schools.

However, progress was gradually made. Employers were asked by Government to associate and co-operate with the new colleges and this approach led to the growing occupational training role of 'technical colleges'. These gradually became institutions for 'day-release' vocational education of those in employment or those serving apprenticeships which remained the main vehicle of vocational training and were usually completed

⁶⁷ The term voluntarism describes the British state's traditional non-interventionist and liberal attitude to education and training (see Green 1990).

without any parallel off-the-job general or technical education (Summerfield and Evans, 1990).

Table 11-1. Type of Colleges in the Incorporated⁶⁸ FE College Sector

Type of College	No of College	Per cent of FE Sector
General and further education college	222	50%
Sixth form college ⁶⁹	109	24%
Tertiary college ⁷⁰	63	14%
Agricultural and horticultural college	30	7%
Designated college ⁷¹	13	3%
Art and design and performing arts	7	2%

(Source: Education and Employment Committee 1998 p184)

The 'technical phase' of colleges, related to the post-war expansion of the economy and the development of apprenticeships, had been relatively short-lived, and confined to the period of the 1950s and 1960s (Spours and Lucas, 1996). Vocational education and training in England was not institutionalised in the same way as in other European systems where specialised vocational institutions were closely tied to vocational qualifications and the labour market (Green, 1995). The British approach to vocational and technical education, even at the height of its close relationship with the economy after 1945, always reflected its inferior status and lack of national coherence.

During the 1970s and 1980s technical colleges became known as further education (FE) colleges as they took on new dimensions, such as academic courses,⁷² and as a consequence of rising levels of unemployment 'new vocationalism' or 'pre-vocational' programmes developed, offering a range of courses which emphasised preparation for work in general but not for specific jobs (Pring, 1992; 1995). As further education (FE) colleges entered

⁶⁸ Incorporated refers to colleges that had been taken out of local government control following the 1992 Further and Higher Education Act that set colleges up as corporations which were centrally funded by the Further Education Funding Council (FEFC).

⁶⁹ Catering for 16-19 year olds.

⁷⁰ Tertiary colleges take all students after 16 years of age. Typically these developed in local education authorities where schooling ended at 16.

⁷¹ Predominantly offering adult provision through evening classes.

⁷² These courses, mostly for 16-19 year olds, had traditionally been offered by secondary schools.

the 1990s they appeared to be meant to cater to everyone - 16-19 year olds, both academic and pre-vocational, adult returners, vocational courses and links with employers, access students,⁷³ higher education (HE) students, those with special educational needs, the socially excluded, basic skills provision, and those not involved anywhere else. As part of the growing emphasis on lifelong learning, it seems that if you are not in a school sixth form,⁷⁴ at work or at university, then you should be involved with the local college (DfEE, 1998).

During the 1990s the relationship between FE colleges and the education and training system could be seen as one in which the aim of central government was to introduce markets and competition to improve provision by setting colleges up as centrally funded incorporations (see table 11-1). Indeed in the 1990s efforts were made to create a market that set schools, colleges, Training and Enterprise Councils⁷⁵ (TECs), and other training providers against each other. The consequence of this has been the further fragmentation of provision, the strategic drift of further education generally, and although there has been some success with Modern Apprenticeships,⁷⁶ a general failure to create a credible high status work-based route (Unwin, 1997). Despite many recent reports and initiatives from the new Labour Government it seems that the piecemeal approach of reforming education and training continues. The New Deal,⁷⁷ Modern Apprenticeships and curriculum reform are generally being considered in isolation with no unified or strategic view of encompassing the tertiary sector of education and training as a whole. Furthermore, as I discuss below, the strategy for introducing standards into training has shifted from one employer-led body to another, yet no real strategic policy has been developed or political leadership has been given. Rather initiatives are taken in the absences of any strategic framework. At the time of writing a new consultation document has been produced by the Government department for education and skills entitled 'Success for All' (DfES, 2002). The document calls for a radical reform of further education and training in England⁷⁸ and proposes a strategy

⁷³ During the 1980s in particular Access courses were developed to give adults progression routes to higher education degrees.

⁷⁴ School sixth forms cater for 16-19 year olds.

⁷⁵ During the 1990s Colleges had an uneasy division of labour with TECs, which had responsibility for the organisation of employers and work-based youth training, and Modern Apprenticeships.

⁷⁶ This is a government sponsored work-based programme for young people.

⁷⁷ New Deal is a programme launched by the New Labour government to help people on state benefits to find work.

⁷⁸ Wales is not included as since devolution the Welsh Parliament has (along with Scotland and N. Ireland) taken responsibility for its own national systems of education and training.

to raise standards in education and training and to provide a more coherent framework for the 6 million learners and 4,000 providers who deliver education and training, be it classroom based provision, e-learning or training in the workplace.

2.2 The Professional Training of Vocational and Technical Teachers

The nineteenth and the early twentieth century inheritance was that teaching in technical colleges was more closely associated with ‘training’ or ‘instruction’, the transmission of skills, and with ‘mastering’ a craft through practice (Tight, 1996; Richardson, 1939). On the whole, most vocational education took place through apprenticeship which assumed that a craft or trade was best learnt ‘on the job’ by copying ‘good’ practice from a skilled and experienced practitioner (Aldrich, 1999). The word ‘trainer’ was often used by the technical college teacher, stressing the importance of ‘mastering’ a repetitive task or role. Alternatively the word ‘instruction’ was often used in technical colleges rather than ‘teaching’ (Richardson, 1939). Such an approach dismissed the need for teachers or trainers to think about teaching styles and methods or any other pedagogic considerations:

‘Teachers chosen from the ranks of industry have certain obvious defects. When fresh they have no teaching practice and no training, and since the amount of teaching that they do in evening classes in a year is relatively small, they take some years to acquire experience. Their technique is therefore faulty, especially in their way of addressing a class and in the preparation of their lessons; they have a marked tendency to impart information rather than to teach’ (Richardson, 1939, p.148).

Up to 1944, teacher training for technical college teachers did not really exist in terms of anything recognizable as such today. Most teachers in further education prior to 1944 were part-time, with a very small core of full-time staff. The majority of vocational and technical teachers were drawn directly from industry with no opportunity for any sort of teacher training (Richardson, 1939). In 1938 there were 170 trades and occupations represented by 4000 full-time technical teachers (Carlton et al, 1971). Coinciding with the growth of technical college students, an official government committee expressed the view in 1944 that subject expertise and vocational experience were important but were not in themselves a qualification for teaching, that the technical or vocational teachers needed teacher training, and furthermore:

‘Technical Education in this country has never received the attention it deserves, and there has hitherto been no systematic provision for recruitment or training of technical teachers’ (McNair Report 1944 para. 381).

The McNair Report (1944) criticised the general quality of teaching as ‘dull’, with no effort being made to use new methods and pointed out that technical education had never received the attention it deserved, and there had never been any systematic provision for the recruitment and training of technical teachers. However, no government action was taken to give the technical college teachers parity with teachers in the school sector and no statutory qualification was required to teach in a technical college, reflecting the view that vocational/technical expertise and experience was adequate for teaching. This played down the need to address discussions about teaching and learning (Cox, 1996). The low status given to vocational education both nationally and by a hierarchical academic educational establishment (McGinty and Fish, 1993) was strongly reinforced by vocational teachers themselves. In the absence of any mandatory professional teaching qualification, the identity of teachers tended to reflect their vocational expertise and industrial experience. Technical colleges had close links to local industry and employers, a fact, which was illustrated in a study of six technical colleges in 1966:

‘The close links with industry were apparent throughout the colleges. Many of the staff were recruited directly from industry and industrial experience was regarded as essential. But they often lacked training in teaching techniques and were without a broad appreciation of the ‘educational ingredient’. It was also claimed that such staff brought industry orientated attitudes towards administration and management practices, and sometimes an ethos in pursuit of students little different from a business pursuit of customers’ (Carlton et al, 1971, p.76).

According to Tipton (1973), departments in technical colleges tended to reflect the values and culture of the industry, staff were often divided by the physical layout of the buildings, and the college structure and college culture tended to reflect these different cultures. ‘Craftsmen taught students who were to become craftsman, graduates taught students who would go to university and so on. The formal structure of the college, therefore invited staff to feel different from one another rather than alike’ (Tipton, 1973). As Venables noted in her study of teachers’ attitudes towards teaching in technical colleges in the 1950 and 1960s:

‘For most of them pride in their skill as engineers, scientists or craftsmen took precedence over any pride in pedagogy.... There was no spontaneous

reference by any member of staff to an interest in the art of teaching as such or in examining in any depth the learning problems of their students. A few were beginning (in 1963) to take an interest in teaching machines,⁷⁹ but on the whole actual proposals for change met with pronounced inertia' (Venables, 1967, p.220).

Venables found that of the 250 teachers from nine technical colleges who she interviewed, the overwhelming majority did not read any part of the educational press, but did read the technical publications concerned with their expertise. She commented that these teachers 'were concerned about the efficiency of their machinery but tended to accept that teaching methods and the examination system were unalterable' (Venables, 1967, p.139). Gleeson and Mardle (1980) also found that vocational teachers had very strong identities as trainers, not teachers. They were of the view that only those with specific industrial or craft experience should or could teach students from that particular industry and the content of courses tended to focus on narrow industry-specific skills at the expense of other more general skills that could be used for other tasks or employment (Sheldrake and Vickerstaff, 1987).

Gleeson and Mardle record how the process of learning appeared to be a highly formal affair, in which the teachers dictated or demonstrated particular principles or skills. This reinforces Bristow's (1970) study which described the majority of technical college teaching as being extremely pedestrian and uninspired with an unhealthy reliance on notes, with a tendency for the teacher to lecture rather than teach, with content dominating any attempt to adopt a more accessible teaching style. As Venables notes:

'By comparison with a schoolmaster or a don, freedom of movement in dealing with students is very limited and - perhaps as a consequence - the technical teacher tends not to regard himself as primarily a teacher or a lecturer whose subject is say, mathematics or engineering drawing, but more often continues with his former trade or profession and regards himself chiefly as an engineer, commercial worker, welder or draftsman who happens to be teaching' (Venables, 1967, p.119).

In many respects the attitudes formed in technical colleges from the earlier period remained dominant in the new FE colleges (Gleeson and Mardle, 1980). Discussion of educational and pedagogical issues was unfamiliar to most technical college teachers and changes to teaching

⁷⁹ This refers to methods that were the fashion of the time around programmed learning packs, with cards and indexes etc. so that students could learn at their own pace in learning workshops. This became most sophisticated in the teaching of foreign languages.

methods were resisted (Venables, 1967). As a result technical, vocational and general FE college teachers continued to lack a clear identity or shared view of professional practice (Robson 1998), constantly prioritising their vocational or subject expertise⁸⁰ over teacher training qualifications, or giving importance to wider debates about teaching and learning (Young and Lucas, 1999). Although efforts were made to provide training for technical college teachers (Green and Lucas, 1999), the expansion of students at colleges and the growing numbers of staff teaching the 'new FE curriculum'⁸¹ did lead to some improvement in the proportion of those gaining teacher education (Bristow, 1970). However, the government stopped short of taking statutory measures concerning teacher education for FE college teachers.

How good or bad the teaching in technical colleges⁸² was in the 1960s and 1970s is hard to tell, as very little research has been carried out (Cantor et al, 1995). It has been suggested that newer ideas on teaching and learning had not penetrated into many departments and that student retention on many vocational courses was low because 'staff had come from industry where all that matters is production. This spills over to their teaching - getting through exams is all that matters' (Venables, 1967, p.130).

Robson (1998) suggests that the diverse traditions and entry routes into FE colleges have created 'weak professional boundaries' for FE college teachers. Robson found that the different qualifications and backgrounds of FE teachers create many divergent groupings, cultures and professional boundaries. For Robson, FE teachers are an example of professional fragmentation, with the division between the vocational and the academic, sometimes referred to as the practical and the academic (Gleeson and Mardle, 1980), as another complicating factor. Consequently teachers are divided into substructures according to subject or vocational area, such as engineering and health studies or sociology and physics. Robson argues that even with the changing FE curriculum of today:

'There is less shared purpose in a typical further education college than a traditional university context where, it might be argued there are (or have been until relatively recently) shared assumptions about such things as

⁸⁰ Which is also divided between different vocational areas, between academic and vocational and vocational and pre-vocational.

⁸¹ This refers to the growth of new non-vocational courses in FE colleges for those who were unemployed or those who needed help in basic skills.

⁸² By the late 1960s and early 1970s technical colleges changed and became known as further education colleges. Although the 'local tec' continued to be used for some time, I shall use the term further education colleges.

the value of abstract knowledge, of academic freedom, of collegial life. Such common academic culture as there has been in universities is clearly now breaking down (Barnett, 1994), but the point is that in FE colleges, it has never existed' (Robson, 1998, p.596).

Although there were increases in the proportion of FE college teachers that were teacher-trained the culture of the 'old technical teacher' still maintained a strong presence in the FE colleges of the early 1990s, particularly in vocational departments. As a consequence FE college teachers in general and vocational teachers in particular seemed, on the whole, to be an anomalous fragmented group with an unclear identity (Robson, 1998)⁸³. Vocational subject teachers in FE colleges had a wide variety of vocational and technical qualifications reflecting the diverse curriculum traditions and the 'qualifications jungle' of technical and vocational qualifications themselves. Generally, the vocational subject teacher focused upon craft or industry specific skills, giving little thought to broader, more transferable skills (Sheldrake and Vickerstaff, 1987) or different teaching methods and other considerations concerning teaching and learning (Gleeson and Mardle, 1980).

Until the mid to late 1990s no government or external body policy or national standards for vocational or general education teaching existed. There was no agreed programme of staff development, no common curriculum for teacher training courses and no minimum qualification requirement to teaching in the further education sector. All of these questions were left to local education authorities, individual colleges and universities to decide.

2.3 Professional Qualifications of Teachers in Vocational Education and Training in the 1990s

As I have illustrated above, by the 1990s, the provision of teacher qualifications continued to be very uneven both in terms of the proportion of vocational/ FE college teachers⁸⁴ (see table 11-2) who held teacher qualifications, and the quality and content of the teacher training qualifications themselves (UPDC, 1999). Some colleges continued with their existing arrangements for

⁸³ In a study of FE teachers in Scotland, Loots and Whelan (2000) came to a similar conclusion. 'Staff in further education institutions have diverse academic, vocational and technical backgrounds and do not share common knowledge, goals or beliefs in education, their role within the college or indeed, their sense of belonging to an institution, (p145).

⁸⁴ The statistics I introduce below do not distinguish between vocational, technical and general education teachers in further education colleges.

university-based teacher education and their own pattern of provision for professional development, while others embraced the National Council for Vocational Qualification⁸⁵ (NCVQ) competence-based approaches (Cantor et al, 1995). The absence of any statutory requirement for FE college teachers to obtain an initial teaching qualification and the absence of any national quality assurance body also resulted in a multiplicity of arrangements for accreditation towards initial teaching qualifications. A report for the Association for Colleges in 1995 raised doubts about the comparability, quality and value of many ITE courses and staff development qualifications (Young et al, 1995).

Table 11-2. Teaching Qualifications of FE College Teachers in England and Wales 1975-1991

Year	% of Graduates	Total Staff	Trained FE Inst.	Trained HE Inst.	Un-trained	% Trained
1975	41.5%	49,469	11,171	9,935	28,363	42.66%
1980	42.8%	60,766	14,772	15,629	30,365	50.02%
1985	46.1%	64,117	16,970	17,476	29,671	53.72%
1986		64,107	16,430	18,650	29,027	53.88%
1987		65,101	15,968	20,091	29,042	55.38%
1989		64,351	14,431	21,219	28,701	55.39%
1990	48.2%	56,124	12,749	18,826	24,545	56.12%
1991	48.6%	54,926	11,726	18,826	24,374	55.62%

Male/ Female Ratio

	1986	1989	1991
Men Trained	52.44%	53.17%	54.20%
Women Trained	60.19%	60.55%	58.45%

(Published in Young et al, 1995)

As far as the content of FE teacher-training courses was concerned, all consisted of developing teaching methods and skills and all had an assessment of practical teaching. However in contrast to teacher training for the school sector, there was no agreed syllabus or agreed content. Furthermore, FE teacher training assumed that student teachers had subject/vocational knowledge and the focus on teaching techniques was general and not tied to vocational or subject specialism⁸⁶. This was partly a pragmatic

⁸⁵ The NCVQ was an employer led government body, which laid down the competencies and national framework for National Vocational Qualifications (NVQs). IT has now been abolished and replaced by the Qualifications and Curriculum Authority

⁸⁶ Some efforts by the bigger providers were made to give a subject focus to the teacher qualification courses by grouping students into broad subject/vocational groups for a part

reaction to the great diversity of subjects taught in further education and partly a continuation of the culture of subject/ vocational specialism discussed above.

Although FE colleges and their teaching staff developed in a very ad hoc and haphazard manner, estimates of the number of FE college teachers who had a recognised teaching qualification in the early 1990s just prior to college incorporation was approximately 60 per cent to 70 per cent of full-time staff (Betts, 1999).

Table 11-3. Full-Time and Part-Time Staff in FE Colleges in 1997

Teach full-time	Teach part-time
43,400	71,900
38% of teaching staff	62% of teaching staff
Source: FEFC 1999 based upon SIR July 1997 from 385 colleges	

While the table 11-2 does not distinguish between vocational and general education teachers, it clearly indicates that the number of untrained teachers remained more or less stable from the mid 1970s and throughout the 1980s, but as the total number of FE college teachers grew they became a smaller proportion of the total. I wish to suggest that many of those untrained were vocational and technical teachers and that the number of qualified teachers in FE colleges rose steadily as academic and general vocational programmes expanded and as patterns of attendance shifted from part-time to more full-time courses (Cantor et al, 1995). The growth of general education courses in FE colleges attracted many qualified teachers from the secondary school sector as well stimulating a growth in FE-focused initial training courses catering to a new wave of FE college teachers who were less representative of industry and particular vocational areas. The number of qualified teachers continued to rise in the 1980s, and although figures are not available for 1993/94, evidence suggests that the upward trend continued and certainly expanded in 1993 as a result of sixth form colleges being included in the FE sector (Lucas and Betts, 1996). Furthermore, the statistics above show that slightly more women than men have a teaching qualification, suggesting that many of the new general education and new vocational staff were women, indicating again that there was little increase in the proportion of teacher-qualified staff on traditional vocational courses which were male dominated.

Even as colleges entered the late 1990s an inspection report entitled 'Professional Development in Further Education' (FEFC, 1999) pointed to a

of the course. However, by the 1980s this was becoming increasingly difficult as FE colleges became more and more diverse.

lack of investment in staff development by a ‘sector that should be convinced of the benefits of training’ (FEFC, 1999, p. 22). Furthermore, the report confirmed previous research, which showed that there had been a big increase in the proportion of part-time teaching staff (Hill, 2000 and table 11-3).

A recent estimate showed that in the five years since 1993 20,000 permanent jobs had been lost at the same time as an estimated 33 per cent increase in student numbers in the same period (Betts, 1999). These job losses have affected some departments more than others, with the losses concentrated on vocational areas such as Engineering (Ainley and Bailey, 1997) as well as middle management. On the other hand, growth in the number of full-time staff has been recorded in programme areas such as Travel and Tourism, Business Studies, IT courses and Media Studies (Hill, 1999).

Table 11-4. Data on Highest Qualifications of FE College Teachers 1996/97

Highest level of teacher training qualification attained	Full time	Part time	% of known
BEd/ BA/ BSc	8,000	5,600	17%
Certificate of Education ⁸⁷	13,400	7,800	26%
PGCE ⁸⁸	8,300	4,700	16%
C&G 730	3,200	6,900	12%
TDLB	1,600	1,400	4%
Other	1,600	4,600	8%
None	4,100	9,800	17%
Not known	3,300	31,100	
Total	43,400	71,900	
Distribution %	38	62	
Coverage: 385 colleges			
Notes: data is rounded to the nearest 100			
Source: FEFC (1999) Staff Individualised Record Data, 31 July 1997 (1996/97)			

The statistics in table 11-4, produced by the now abolished Further Education Funding Council, illustrate the fragmented and ad hoc nature of teacher certificates in the further education sector. Firstly, as with the other figures they do not distinguish between general education and vocational teachers. Information on this is not available. Secondly, in column one, a

⁸⁷ A Certificate of Education is a full post-compulsory teaching qualification for vocational teachers who do not have a degree or equivalent.

⁸⁸ A PGCE is a Post Graduate Certificate of Education, which is awarded to those with degrees or equivalents.

BEd is a recognised teaching qualification,⁸⁹ yet a BA and BSc is simply a degree. Thirdly, neither the City and Guilds 730⁹⁰ nor the TDLB⁹¹ are recognised as full-teaching qualifications, and in any case they are offered at different levels that are not specified. However, putting these distinctions to one side and combining the first three columns of the above data as if they were teacher qualifications, then calculating it against the total of full-time teachers, I estimate that approximately 68% of full-time staff had full teaching qualifications in 1996/7⁹². The same calculations with part-time staff show 25% with recognised teaching qualifications. The full-time and part-time figures are put together below with early statistics from 1993/4 so that a comparison between the years can be made.

Table 11-5. Number and Percentage of FE College Teachers with Government Recognised Initial Teaching Qualifications (TQs) Between 1993/94 and 1996/97

	1993/4		1996/7	
	All	With TQs	All	With TQs
Full-time	51,000	34,680	43,400	28,512
Part-time	49,000	12,250	71,900	17,975
Total	100,000	46,930	115,300	46,487
TQ qualifications		46.9%		40.3%

Sources: Young et al, 1995; Bell, 1996; FEFC, 1999b; DfEE, 2000a

The table 11-5 excludes vocational and technical teachers outside of FE colleges for which no statistics exist. Furthermore, even within FE colleges the distinction between vocational and general education teachers is not made. Figure five above suggests that the proportion of FE teachers with initial teaching qualifications in colleges declined during the 1990s and I wish to suggest that this would be reflected with vocational teachers and trainers in private units or the workplace. However, as I explain in the next section this downward trend is likely to have been reversed with the

⁸⁹ The BEd is an Education Degree which has been a an alternative route to the PGCE for school teachers.

⁹⁰ The City and Guilds is an awarding body that was founded in the nineteenth century to certificate vocational qualifications. The City and Guilds 730 is a very basic teaching qualification historically developed for part-time vocational and adult teachers. It is a well-established qualification that is often accredited as a first-stage to a full three-stage teacher qualification.

⁹¹ The TDLB is an assessor qualification for competence based National Vocational Qualifications. It is gained through producing a portfolio of assessment evidence.

⁹² Although no hard data exists anecdotal evidence suggests that vocational subject teachers are less likely to be teacher qualified then others although this would also vary between traditional and newer vocational areas.

introduction of compulsory teacher qualifications for all FE college teachers from September 2001 and the injection of considerable amounts of money towards the professional development of further education teachers, including vocational teachers outside of the FE college sector.

3. RECENT CHANGES: TOWARDS THE PROFESSIONALISATION OF TEACHERS IN FURTHER EDUCATION AND VOCATIONAL TRAINING?

3.1 The Establishment of National Training Organisations and the Further Education National Training Organisation (FENTO)

As illustrated above, vocational, technical or general further education teacher qualifications developed in a very unplanned way, with little common understanding on the content or level of such teacher training courses. In essence, the Labour government elected in May 1997 continued the previous Conservative administration's policies of putting employers in control of standards. Such an approach was based upon the belief that putting employers in overall control of standard-setting bodies would raise skills and standards in industrial training without the government taking any direct responsibility (Hodgson and Spours, 1999). This approach, first adopted by the Conservative Government, led to the development of sector specific 'Lead Industry Bodies'⁹³ (LIBs) in the late 1980s, 160 of which were eventually established (Raggatt and Williams 1999). The LIBs were given the responsibility for designing occupational standards of competence upon which national vocational qualifications (NVQs) could be based.

By the mid 1990s it became a widely held view that the 160 lead bodies had generated confusion and overlap and that a more strategic approach was required (DfEE, 1995). In April 1996 the Government initiated an attempt to rationalise the system by introducing new broader sectoral National Training Organisations (NTOs), which would have a more strategic role and would replace the narrower Lead Industry Bodies. These NTOs were, according to

⁹³ LIBs were made up of employers from specific industries i.e. Engineering. They then set the competencies upon which the national vocational qualifications for the industry would be based.

the Government, a rationalisation of the old Lead Industry Bodies established to encourage employers to express a greater interest in, and commitment to, the training and development of their staff (DfEE, 1998). They represented 'a new era for training in Britain because they will spearhead the development of skills by working with employers to increase the uptake of vocational qualifications which are based upon them' (NTONC, 1999, p. 1).

In late 1998 the Secretary of State for Education and Employment approved the establishment of the Further Education National Training Organisation (FENTO). The national standards were adopted by FENTO and officially launched in January 1999. Alongside FENTO there were also separate NTOs for Adult and Community Education and Youth Work, as well as other NTOs such as Local Government, Science, Technology & Mathematics, Higher Education and Training and many others. All NTOs were co-coordinated by a board made up of senior employers. However, the government strategy, which was to rationalise the old system, has in turn led to a myriad of NTOs adding layers to an already complicated education and training scenario which is likely to perpetuate the fragmentation of post-16 education and training and not to reinforce the possibility of a more strategic approach to these issues (Guile and Lucas, 1999).

Table 11-6. Further Education Standards

FURTHER EDUCATION NATIONAL STANDARDS (FENTO 1999)		
Meet Professional Requirements		
<ul style="list-style-type: none"> • work within a professional value base • conform to agreed code of professional conduct 		
Professional Knowledge	Key Areas of Teaching	Personal Skills & Attributes
<ul style="list-style-type: none"> • the place of FE in the wider context • knowledge of subject area • learning theory, teaching approaches and • methodologies • effects of change on the FE sector and teachers' • practice 	<ul style="list-style-type: none"> • planning and preparing teaching and learning programmes for • groups and individuals • developing and using a range of teaching and learning techniques • managing the learning process • providing learners with support • assessing the outcomes of learners and learners' achievements • reflecting upon and evaluating one's own performance and planning future needs • assessing learners' needs 	<ul style="list-style-type: none"> • critical self-reflection • communicate effectively with groups • and individuals • integrity, reliability and confidence • empathy, rapport and respect for • learners and colleagues

Because National Training Organisations seemed to replicate the earlier Lead Industry Bodies, in October 2001 the Secretary of State for Education and Skills announced the setting up of Sector Skills Councils (SSC) which will replace NTOs in 2002 (Morris, 2001). These new Sector Skills Councils will cover larger areas of the economy than the NTOs. Officially FENTO ceased to exist from April 2002 yet no Sector Skills Council has been formed which includes the FE college sector and little strategic leadership is given for its formation. It is far from clear how the SSCs will be formed. As in the case of FENTO it could lead to a council that will embrace all post-16 providers including adult and community education and training in the workplace. Furthermore, like NTOs the new Sector Skills Councils are UK-wide, spanning, in the case of FE colleges, quite different traditions and standards in FE colleges in Scotland and Northern Ireland. How these bodies fit into devolved government and regional planning is not clear although establishing a sector skills council requires approval of all four nations that make up the UK and such agreement is difficult to achieve as each nation has its own educational agenda.

3.2 The Introduction of National Standards

In 1996 a Further Education Staff Development Forum was established to arrive at a set of national standards for all occupations in the FE college sector, and to develop a framework for initial training and professional development for FE college teachers. During the consultations many contributors confirmed the view that teachers did not want narrow competencies but a holistic approach with broad standards that allowed for professional judgment and knowledge. As a result of this feedback broad professional standards were arrived at which are known as the 'National Standards for Teaching and Supporting Learning in Further Education in England and Wales' (FENTO, 1999). The idea of these national standards is that they become a benchmark against which all further education teaching qualifications and professional development programmes are to be measured. The main headings of the standards are illustrated below.

Each of these key areas are then broken down into broad headings, which are in turn broken down to more specific standards. The standards apply to all subjects and are not specific to technical and vocational teachers. Let me use the Key Area 'Managing the Learning Process' (as in table 11-6) as an example.

D. Managing the Learning Process (FENTO, 1999)

Teachers should be able to:

- D1 establish and maintain an effective learning environment
- D2 plan and structure learning activities
- D3 communicate effectively with learners
- D4 review the learning process with learners
- D5 select and develop resources to support learning
- D6 establish and maintain effective working relationships
- D7 contribute to the organisation's quality-assurance systems.

Taking the broad heading D3, 'communicate effectively with learners' this is broken down as follows;

To do this teachers:

- A select and organise relevant information clearly and concisely
- B present information to learners clearly and in an appropriate format
- C use a range of communication skills and methods appropriate to specific learners and the subject being studied
- D maintain and encourage effective communication with and between all learners
- E foster learner's enjoyment of learning
- F listen to and respond to learners' ideas.

This requires critical understanding and essential knowledge of:

- how to select and organise information effectively
- ways of presenting ideas
- appropriate forms and registers of language
- the conventions of grammar and spelling
- appropriate audio-visual aids and how to use them effectively
- developments in information learning technology and how these can support and promote learning.

From September 2001 University teacher training programmes and awarding bodies were required to submit their documentation for approval or endorsement. This process, which is entirely paper-based,⁹⁴ checks that the courses cover the standards for teaching and supporting learning and that internal and external quality assurance procedures are in place (FENTO, 2002). However, in checking the standards against existing courses, the

⁹⁴ How such criteria can be judged by scrutinising course handbooks/documentation and quality assurance procedures I will leave to the reader's imagination.

question of applying educational or academic levels to the standards caused (and is still causing) considerable consternation. For example, one University reported that, 'the standards do not give scope for indicating the quality or level of achievement. We would not expect inexperienced teachers to demonstrate their knowledge and skill in relation to a particular standard at the same level as that of experienced teachers' (University of Wolverhampton, 1998, p. 4). One of the most important issues on the implementation side is the disaggregation of the standards in terms of levels. For example, the difference in standards appropriate to someone entering the profession as compared to those that apply to the professional development of experienced teachers (DfEE, 2000).

It is still early in the application of the national standards and various attempts are being developed. The irony is that colleges and universities are grappling with the opposite problem of the National Vocational Qualification approach, which specified competencies in endless detail and became an increasingly bureaucratic exercise for colleges. In the case of the national standards, it is the very generality of the standards, welcomed by awarding bodies, which is causing most consternation when applied in practice against existing courses. There is little disagreement about the national standards as such, although they are, like all occupational standards or competencies, open to wide interpretation (Elliott, 2000). I wish to suggest that to date the use of the national standards has led to a narrow focus on the 'coverage' of the standards against existing courses mentioned above. This 'coverage' does not take account of the wider context in which professional practice takes place in further education (Bathmaker, 2000) and as a consequence the application of the standards is being treated as a technical issue with teachers being seen as technicians not professionals (Hodkinson, 1998). In other words, the national standards may provide a benchmark drawn from existing practice yet, in the absence of a professional culture which has agreed practices or discusses teaching and learning, they could lead to a greater standardisation of practice which would weaken one of the important strengths of vocational and further education teachers, namely their diversity of practice to meet the diversity of learner needs.

Despite these limitations the national standards have been broadly welcomed because, with all their faults, the standards represent a first, and historic, attempt to arrive at national standards for FE college teachers (Nash, 1999). The work of FENTO also represents the first attempt to get some sort of uniformity of content, teaching hours and teaching observations. Although there are growing criticisms of FENTO trying to establish some standards to the diverse and ad hoc arrangements for teacher-training for the FE sector it was never going to be a smooth process and it should be remembered that we are only at the beginning of this stage in the

UK. If or when a new post-16 Sector Skills Council is established it is hoped that it will be able to apply the same standards for vocational and general education teachers in institutions as well as workplace trainers. It is too early to tell the outcome of the present changes. No strategic leadership is being given by Government or government departments and it seems as though the normal muddle and strategic drift of vocational education and training will continue as politicians focus on the more politically sensitive school and university sectors.

Table 11-7. Categories of Qualifications for FE College Teachers

Category of Qualification	Equivalence	Applicable to
Introduction/ Stage One	City & Guilds 703 Part One ⁹⁵	All new teachers within one term
Intermediate/ Stage Two	City & Guilds 730 Part Two ⁹⁶	All part-time teachers within four years of employment
Threshold/ Stage Three	PGCE/Certificate of Education (FE) ⁹⁷	All full-time teachers within two years of employment
Each category to comply with National Standards		

3.3 The Introduction of Compulsory Teaching Qualifications

Alongside the development of national standards the Labour Government's post-compulsory education policy has been to make lifelong learning a major policy priority, giving education and training prime importance in the effort to raise economic output and to bring about a more just and inclusive society (DfEE, 1998). The wish to improve education and training has led the government to focus on raising the quality of teaching (DfEE, 2000).

On 10th February 2000 the Minister for Lifelong Learning launched the consultation paper on 'Compulsory Teaching Qualifications for Teachers in Further Education (DfEE, 2000). It renewed the government's pledge to 'offer effective teaching and training by appropriately qualified staff who

⁹⁵ City and Guilds 730 part one is a one term basic teaching qualification, which was initially developed for part-time adult educators and trainers in the workplace.

⁹⁶ City and Guilds 730 part two is a two term teaching qualification, which follows from part-one.

⁹⁷ The Post Graduate Certificate of Education and the Certificate of Education are both the only government recognised full-teaching qualifications.

have the opportunities for continuing training and development' (DfEE, 2000, p.2). The paper went on to say that they would expect the new Learning and Skills Council, which funds post-16 education and training to offer contracts only to those providers who were able to demonstrate that they have reached the appropriate standards set by the inspectorate, rewarding the best providers, setting targets for weaker providers and challenging 'coasting providers'. The categories, equivalencies and application of compulsory teacher education are illustrated in table 11-7.

This framework provides for both full-time and part-time teachers. It is compulsory from September 2001 for all new teachers. However, this only applies to those teaching in the FE college sector, and excludes new teachers or trainers in the private sector or the workplace.

4. CONCLUDING COMMENTS

This chapter began by analysing changes in technical and vocational education from their early ad hoc and impoverished beginnings in the nineteenth century to the present day. I described how by the 1980s the old technical colleges had become colleges of further education, emerging as extremely diverse in character (Avis et al, 2001), reflecting the different priorities of local government, labour markets and national government departments, and acquiring a much more diverse mission than their traditional focus on vocational education and training.

Alongside the general historical development of technical and vocational education I examined the development of teacher education and the professional development of vocational and technical teachers from the late nineteenth century up to the present day. Little research exists concerning vocational and technical teachers. Where fragments of information are found, no distinction is made between vocational, technical or general education teachers. I suggested that in general, the history of the professional development of teachers in further, vocational or technical education has been a history of 'benign neglect', with both the state and teachers themselves assuming that vocational or subject expertise was a sufficient qualification to teach in FE colleges (Robson, 1998). I have suggested that this legacy produced a culture where many teachers' identity was primarily tied to their expertise, resulting in diverse and fragmented professional practices. I argued that despite technical colleges becoming more diverse institutions from the 1970s onwards, the professional practice of FE teachers was not influenced by new ideas or broader debates concerning teaching and learning, and often the teachers' professional practice remained isolated

within their specialities, acting as barriers to developing a sense of collective professional values and standards (Avis et al, 2001).

I showed that although efforts were made to regulate and fund teacher education programmes in the 1980s, there was still no statutory requirement for teaching qualifications, no minimum entry qualifications or agreed-upon common content for initial teacher education programmes. Furthermore, vocational and technical teachers were trained alongside general education teachers and with a few notable exceptions no subject specific focus was provided in further education teacher qualifications in the UK. In these circumstances the professional qualifications of all teachers in the further education sector developed in an ad hoc, fragmented and unplanned way, raising concerns about their content, quality and comparability.

The chapter concluded however, that the government has recently established national standards and introduced compulsory teacher qualifications for all new FE college teachers. I argued that this stands in stark contrast to the past neglect and represents the first national attempt to regulate the professional practice of FE college teachers. Although the regulations and standards do not yet extend to vocational and technical teachers outside of the FE college sector, there are some optimistic suggestions that, through new strategic bodies, standards and professional qualifications will apply to all vocational and technical teachers whether in the workplace, community or FE college. The movement from the neglect of vocational and technical teachers to regulation and professionalisation has just begun in the UK and it remains problematic, not only because of the ad hoc nature of FE teacher education programmes but also because of the difficulty of applying national regulations to a sector that has such a diversity of provision, casualisation and lack of professional identity

As the latest UK Government discussion paper ('Success for All') on further education says, in England at present there are some 6 million learners, who are served by a range of about 4000 providers which include classroom-based provision such as college, e-learning, and training in the workplace. Within this provision,

'there has been little strategic planning for the coherent longer term development of the supply side to provided the type and quality of provision local learners and employers want.. and the workforce's skill and career development has often been neglected. There have been unhealthy levels of casualisation and insufficient emphasis on improving professional skills, on updating subject or occupational knowledge and on developing skills for the future' (DfES, 2002, p.5).

There is little doubt that contemporary UK government documents on education and training do put a refreshing new emphasis on vocational

education and training. The present UK Government is putting a large amount of resources towards vocational education and training and is also committing funds for the professional development of vocational teachers. The Government Department for Education and Science is piloting subject-specific teacher education for those teaching adult basic skills. There are proposals before the UK Parliament that contain new provisions which would allow the requirements for new teachers in further education colleges to be teacher-qualified to extend to all teachers and trainers in private, voluntary and workplace contexts. These developments represent a profound break with the past neglect of teachers and learners in education and training and would bring about the possibility of further education teachers arriving at some common identity and even establishing a professional body. It remains to be seen if such a strategic advance will be taken or whether the professional situation of teachers in technical and vocational education and training will continue to be marginalised.

Furthermore, teacher education for the FE sector is at present undergoing its very first national survey inspection, leading to the establishment of a national inspection regime. Within this survey inspection there is a major focus on the question of the training of vocational teachers and of giving some subject support to them. Another focus is the vexed question of introducing minimum basic skills (Maths, English etc.) for all FE teachers. The result of this survey inspection is expected in the Summer of 2003. It remains to be seen if such bold strategic advances will be taken or whether the professional situation of teachers in technical and vocational education and training will continue to drift along in its present (very British) ad hoc and unplanned manner.

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Chapter 12

CAREER AND TECHNICAL TEACHING AND TEACHER EDUCATION IN THE UNITED STATES OF AMERICA

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1. HISTORICAL DEVELOPMENT OF CAREER AND TECHNICAL TEACHER EDUCATION IN THE UNITED STATES

Career and technical education in the United States draws its roots primarily from two sources: the growth and development of publicly funded vocational education and the growth and development of teacher education.

1.1 Historical Overview of Vocational Education (Career and Technical Education) in the United States

Throughout the 16th and early 17th century Colonial period, education in the United States was only offered in the home, in private schools – usually through churches, or in the form of apprenticeship training. Public education began to take shape just after the Revolutionary War when leaders realized that an educated populace was imperative for the new democratically governed country to survive and flourish as a free society. In 1647, the general court of the Commonwealth of Massachusetts ordered towns of more than 50 households to employ a teacher to provide basic instruction in reading, writing, and arithmetic. In a short period of time, other colonial

states (i.e., Pennsylvania, New Jersey) added common schools and began to require compulsory education for elementary-school-aged children.

Public – or common – education was deemed to be in the purview of the states and thus no system of national or federal sponsorship or control of public education was developed. The curriculum and practices of the early American schools were largely fashioned similarly to the country from which particular settlers originated. The classical curriculum was the prevailing mode, but some states or communities fashioned curriculum only in reading and writing or around the Latin grammar school to prepare students for entrance into colleges (Roberts, 1965).

The American cultural and economic landscape changed dramatically with the onset of the Industrial Revolution near the turn of the 20th century. Almost overnight, the nation needed a large number of workers prepared for trade and manufacturing employment. The first manual training school in the United States was established in St. Louis, Missouri (as a part of Washington University) in 1880. Other manual training schools in Chicago, Illinois; New Orleans, Louisiana; Toledo, Ohio; and New York were added shortly thereafter. All of these early manual training schools were administered, funded, and operated apart from the academic high schools. Also, around the turn of the 20th Century, leaders in education and industry began to realize that an increasingly diverse student population was not receiving the type of education needed to prepare them for life outside of school. Further, states were concerned about how to meet the rapidly growing shortage of skilled workers. Various organizations and industrial groups focused on the preparation of a skilled workforce began to lobby for federal funds in support of job training or vocational education in U.S. public schools.

In 1914, a U.S. Congressional Commission on National Aid to Vocational Education was established to study the need for vocational education, need for federal grants for vocational education, the kind of vocational education that might be federally funded, and the legislation that should underpin federal grants to the states in support of vocational education. The findings of this Commission, with support from many industrial and education associations, resulted in the passage of the Smith-Hughes Act of 1917 which provided federal funds at the high school level in support of programs in vocational education in the U.S. (Barlow, 1976; Scott and Sarkees-Wircenski, 2001).

Since 1917, and up through the current time, the federal government has continued to fund vocational education through a series of new and renewed federal legislation. Although a relatively small proportion of the total dollars allotted for education is spent on vocational education yearly in the U.S., the federal legislation has had an enormous impact in providing direction and

financial support for program structure, curriculum, targeted audiences, teacher qualifications, and research in vocational, technical, and career education.

It is important to note that public education in the United States is almost exclusively the responsibility of the 50 states and territories and their related authorities. Most education decisions are left in the hands of locally elected city or county school boards. Even within local school districts, there is often great variability, and many curricular and instructional decisions are made at the individual secondary school or postsecondary college site (Lynch, 2000). But the federal government, through various vocational education and employment-related legislative acts, continues to provide some funding and an overall framework for how funds are to be used to nearly all public school systems, both secondary and postsecondary, in the U.S.

Today, thousands of U.S. public high schools and community and technical colleges offer in all 50 states – at public expense – employment-related education programs and courses to prepare youth and adults of all ages for various careers. The nomenclature for these employment-related programs varies among the states (e.g., vocational education, vocational and technical education, workforce education, workforce education and development, career and technology education, etc.). But, generally today, most states and most programs in most localities relate well to and understand the moniker career and technical education (CTE) that is increasingly being used in the literature, state-level legislation, and promotional materials to identify the field. Furthermore, the Association for Career and Technical Education (ACTE, formerly called the American Vocational Association) is the largest national association of professional CTE educators.

1.2 Growth and Development of Career and Technical Teacher Education

As a prelude to the Smith-Hughes Act of 1917, much debate and discussion occurred about the proper way to train teachers of career and technical education. Charles Prosser, the Director of the first Federal Board for Vocational Education, which was charged to oversee the operation of vocational education in the U.S., drafted 16 theorems to serve as a foundation for sound and successful vocational education programs. Two of those theorems related directly to the preparation of teachers: “Vocational education will be effective in proportion as the instructor has had successful experience in the application of skills and knowledge to the operations and processes he [sic] undertakes to teach” (Prosser and Quigley, 1950, p. 223) and “The only reliable source of content for specific training in an

occupation is in the experiences of masters of that occupation” (Prosser and Quigley, 1950, p. 226).

Prosser believed that teachers’ trade experience would correlate with student outcomes; the more trade experience, the better the outcomes of students. College-level training for trade teachers was not expected nor considered especially desirable. In fact, he believed that the academic nature of a college education and the time it takes to complete a degree would provide difficulties for a practically-oriented and experienced craftsperson who was probably older, needed income, and whose needs could not be met at a residential campus. Prosser and the Federal Board concluded that normal schools or state colleges and universities were not capable of preparing teachers for career and technical education. Prosser did believe in some teacher training for trade teachers, but it was different from the type normally provided for prospective elementary and high school academic teachers. He detailed the competencies and curriculum that should be required and recommended that delivery be provided under the supervision and control of a state board of vocational education (Prosser and Quigley, 1950; Lynch, 1997).

It is interesting to note that Prosser held a different view on teacher training for home economics and agriculture teachers, the other two programs funded through the Smith-Hughes Act of 1917. Prosser believed that most of the “boys” would have worked and lived on farms and studied agriculture in high school. Similarly, a “girl” would have acquired “homemaking interests, insights, and practical doing and managing abilities...under the cooperative tutorage of her mother and her high school homemaking teacher” (Prosser and Quigley, 1950, p. 310). Prosser concluded that teachers of high school agriculture and home economics programs could be college trained provided they had previously completed high school agriculture or home economics classes and had practical experiences identified with the skills or knowledge needed to teach in these areas.

Thus throughout the nearly 85 year history of career and technical education in the United States, there has been a two-tier system of preparing teachers. Those who are teaching in various trade and health fields typically come with years of occupational experience in jobs or professions related to their teaching field as their primary credential for teaching. Those teaching agriculture, business, family and consumer sciences (formerly called home economics), technology education (formerly called industrial arts), or marketing (formerly called distributive education) typically are college educated and prepared to teach through pre-service teacher education programs in colleges and universities.

Various iterations of this two-tier level for preparing teachers are still very much in existence in career and technical education today. In general, though, the trend in the United States today is to require all career and technical education teachers to either (a) have a baccalaureate degree, as a minimum, prior to entering teaching; or (b) to acquire one within a certain timeframe, say 5 to 10 years, after beginning to teach. Some specific teacher education is required either through a pre-service teacher education program or some version of school-based training sponsored by a local school system or state department of education.

2. TEACHING CAREER AND TECHNICAL EDUCATION IN THE UNITED STATES

Career and technical education cuts a broad swath in the educational landscape in the United States. It encompasses a tremendous number of programs and teachers at both secondary and postsecondary levels. There are some programs in middle high schools (e.g., 6th, 7th, and 8th grades) as well, usually focused on purposes of career exploration in such areas as business, manufacturing and construction, agriculture, family and consumer sciences, and health. At the high school level, career and technical education is offered for purposes of general and specific labor market preparation in comprehensive public high schools (e.g., grades 9 through 12); vocational high schools, area vocational schools or regional centers; and, more recently, in career academies. At the postsecondary level, career and technical education is offered in community colleges, technical colleges, and adult learning centers.

2.1 Secondary Career and Technical Education Programs

About 67% of all public high schools offer at least one CTE program — usually identified as three Carnegie unit credits in a single program area identified with a specific labor market specialty (see Table 12-1). Thus, it is believed that the vast majority of high school students in the United States have access to some (although perhaps limited) career and technical education. Unverified data reported from the current assessment of vocational education (in progress) indicates that 96% of all U.S. high school students take at least one course classified as career and technical; about 25% are “concentrators” who take at least 3 credits in one occupational area;

and 44% are “investors” who take at least 3 occupational courses, but in different programs (U.S. Department of Education, 2002e).

Table 12-1. Type of Public High School and Vocational Education Offerings in the United States

Locale	Percent of Distribution of Public High Schools			Percent of Schools Offering at Least One Program
	Area or Regional Vocational School	Vocational High School	Comprehensive High School	
Overall/ all areas	6.2	4.6	89.2	66.5
Urban areas	5.5	10.3	84.2	72.9
Suburban areas	5.9	4.4	89.7	63.9
Rural areas	6.6	3.1	90.3	66.5

Source: U.S. Department of Education. (2002b). Vocational Education Offerings in Rural High Schools. Washington, DC: Office of Educational Research and Improvement.

2.2 Comprehensive Public High Schools

Comprehensive public high schools in the U.S. offer a full range of academic courses, some career and technical education courses or programs, special education, fine and performing arts, physical education and athletic programs, extra-curricular activities, and many other student services. Typically, comprehensive public high schools serve a wide range of students, with varying abilities and very diverse social-economic demographics, who are enrolled in college preparatory, career and technical, special education, and general programs. According to 1999-2000 data, there were 84,902 public schools in the United States, with about 19% or around 1,600 classified as high schools—usually grades 9-12, but some with a low grade of 7 or more on up to grade of 12. The majority of public schools are in large or midsize cities, accounting for 69% of all public school students (U.S. Department of Education 2001).

2.3 Vocational High Schools

Vocational high schools are sometimes referred to as “magnet schools,” “specialty schools,” “technical schools,” or some other moniker. They are more apt to be in urban areas and provide career and technical education programs that can be accessed by students from several of the district’s high schools. Vocational high schools, too, are increasingly offering industry- or vendor-sponsored certification programs (e.g., auto service, metalworking, information technology); apprentice training; and opportunities for graduates

to take state-required licensing examinations such as those offered by the National Occupational Competency Testing Institute (NOCTI). In 1999-2000, there were 1,048 vocational high schools in the United States (U.S. Department of Education, 2001).

Historically, students attended the vocational high school for about one-half of a typical school day for the career and technical program and attended the “home” or sending high school the other half for academic courses, extra-curricular activities, and other student programs and services. Vocational high schools often enroll adults in the instructional programs as well, sometimes in separate “evening” classes and sometimes directly in with the high school students.

2.4 Area Vocational Schools

Generally, these schools function very similarly to those vocational high schools located within the governance body of a single school system. In principle, several school systems or districts pool their resources to operate an area school, and students from several districts’ high schools are sent to the area school for career and technical education. These area vocational schools are usually administered by their own board of education, which includes members from the various districts contributing to the area school and others from area businesses and industries.

2.5 Career Academies

Career academies are characterized by a program and structure that attempts to ensure that the graduates are technically and academically proficient to enter the workforce and enroll in postsecondary education. The original academies were targeted at students who were at risk of dropping out of school, not doing well in the comprehensive high school, or who were just not well served by the structure in the typical classroom. There are over 1,500 high school career academies in the United States (Stone and Bae, 2002).

Most of the career academies combine what is thought to be among the greatest strengths of the vocational high school and of the academics offered in the comprehensive high schools. They tend to have at least five characteristics in common: (1) clusters of students who share many of the same classes each day and have the same teachers from year to year; (2) academic courses that meet high school graduation and college entrance requirements; (3) career and technical courses sufficient to comprise a career major; (4) work-based learning experiences built into the curriculum; and (5) a group of business persons who advise the school district on important components of

the program such as curriculum, work based learning, financial aspects, specific courses to offer, and equipment (Lynch, 2000).

2.6 Programs and Curricula

Throughout the United States, career and technical education at the high school level has been historically—and still is in much of the country today—identified with seven program areas: agriculture, business, family and consumer sciences (formerly called home economics), marketing (formerly distributive education), health, trade and industry—or industrial education, and technical. Some states and localities tinker with these names and/ or combine one or more for purposes of program planning, curriculum and instructional delivery, reporting of enrollments and other numbers, et cetera. For example, family and consumer sciences (home economics) is often cited as having two purposes: occupational (i.e., specific labor market preparation in wage earning occupations) and preparation for home and family life (i.e., general, practical, or life skills education). Technology education, usually considered more compatible with general or academic education purposes, is often cited as an eighth program area or field within career and technical education. Increasingly, programs in business and marketing are being combined for program planning and enrollment reporting purposes.

Each of these programs tends to have national and/ or state level professional associations that provide a variety of services including conferences, publications, newsletters, and websites for information. Many include a research and development activity that often includes identification of curriculum standards and resources of use to classroom teachers.

The following identifies websites to access curriculum standards that have been developed by professional associations in 7 programs in high school career and technical education in the U.S.

- Agriculture Education: Refer to the State Leadership Center for Agriculture Education for a list of agriculture education standards developed by state.
- Business Education: National Business Education Association. (2001). *National Standards for Business Education*. Reston, VA: Author.
- Health Careers: National Consortium on Health Science and Technical Education. *National Health Care Skill Standards* (n.d.).
- Family and Consumer Sciences: *National Standards for Family and Consumer Sciences Education*.
- Marketing Education: MarkEd Resource Center. (2000). *Comprehensive Curriculum Planning Guide 2000*. Columbus, OH.

- Trade and Industrial: Refer to the National Skill Standards Boards for standards by occupational area, and the National Center for Construction Education and Research for Construction and Maintenance standards
- Technology Education: International Technology Education Association.

Various local school systems and some state systems throughout the country are increasingly replacing or modifying some of these historical high school programs and/ or are adding new programs in response to (a) local or state industry needs; (b) changes in the economy which demand changes in career and technical programs; (c) job and career opportunities for graduates; (d) opportunities for students to start on a career pathway in high school and continue on with it into postsecondary education (i.e., a tech prep or articulated, secondary-postsecondary curriculum model); and (e) closer alignment with industry skill standards or new career pathways or clusters. A few examples of “new” programs include culinary arts, computer technology, the performing arts, hospitality and tourism, pre-engineering, construction or building trades, and auto technology.

A relatively new initiative in the U.S. that is influencing new or modified career and technical programs includes the development of 16 career clusters to address the academic and career needs of all students. These newly identified career clusters are thought to be organized better around today’s occupations, workplaces, and the U.S. economy. State economies vary in what industries and occupations are important, so areas of career cluster within a state will also vary. The 16 career clusters are as follows:

- Agriculture and Natural Resources
- Arts Audio-Video Technology and Communications
- Business and Administrative Services
- Construction
- Education and Training Services
- Financial Services
- Health Science
- Hospitality and Tourism
- Human Services
- Information Technology Services
- Legal and Protective Services
- Manufacturing
- Public Administration and Government
- Retail/ Wholesale Sales and Service
- Scientific Research, Engineering, and Technical Services
- Transportation, Distribution, and Logistics Services

The Department of Education's Office of Vocational and Adult Education (2002f) career clusters website⁹⁸ contains the national curriculum frameworks already developed for selected career clusters. Additional frameworks are currently in development by a consortium of states, headed by the National Association of State Directors of Career Technical Education Consortium (NASDCTEC). The curriculum frameworks center on foundation courses, technical core courses, and specialty courses over a span of grades nine to sixteen.

2.7 Postsecondary Career and Technical Education Programs

The nation's community and technical colleges maintain a unique position to provide education and training for today's workforce. Enrollments in postsecondary institutions are tending to increase dramatically in the United States. Students are seeking employment-related education, workers are returning to school to increase job skills, and employers are collaborating with postsecondary education institutions for worker education and training programs.

Community colleges are organized to provide postsecondary education programs that serve the community. The way in which community colleges do this varies considerably throughout the country. For example, some will emphasize college transfer programs by focusing on that general education typically required in the first two years of an undergraduate education. These general and liberal education courses are nearly identical to those students would complete in a bachelor's degree program at a four-year college or university. Others focus on technical education and offer a wide range of programs, courses, and credentials—including associate degree, diploma, advanced diploma, certificate, license, etc.—offered to meet the community's short- and long-term employment needs. Community colleges enroll about 44% of all undergraduates in U.S. higher education institutions, and about 45% of first-time freshmen enroll in community colleges (Coley, 2000; Phillippe, 2000).

2.8 Technical Colleges

Technical colleges are similar to community colleges; however their primary mission is to provide education and training in career and technical education at the postsecondary level. The curriculum is typically compe-

⁹⁸ www.ed.gov/offices/OVAE/clusters

tency-based, benchmarked by business and industry standards, occupationally focused, and technically oriented. Education and training programs are usually developed and delivered by using state-of-the-art equipment, the latest technology, and contextualized instructional techniques. Long- and short-term training programs customized for area industries are typically offered, often delivered on company sites. Credentials awarded at technical colleges include the associate degree, one- and two-year technical diploma, short-term (i.e., less than one year) diploma, certificates, apprenticeship, and advanced technical certificates. There are some technical colleges or institutions that do combine general education with technical coursework, and credits earned may transfer to four-year institutions.

2.9 Adult Learning Centers

Adult learning centers provide education and training outside the formal schooling system for adults and youth, mainly over 16 years of age but sometimes younger. Adult education entails various definitions depending on the legal, social, cultural, economic, and environmental contexts of the community. Adult learning centers may focus on literacy, English as a second language, completion of a general education diploma, problem-solving and life skills, apprenticeship programs, work-related courses, continuing education, and personal development courses (i.e., health, hobbies, sport lessons, dance, music). Over 46% of the adult population participates in one or more types of adult education, with work-related and professional development courses identified most frequently (U. S. Department of Education, 1999b).

2.10 Other Career and Technical Education Program Delivery Structures

Several other variations of secondary and postsecondary delivery systems are available in the United States. These include proprietary schools, vendor certification programs, and human resource development.

Proprietary schools or colleges in the United States offer postsecondary career and technical education and practical training in a wide range of very specific occupations; e.g., accounting, automotive technician, barber, desktop publishing, fashion merchandising, medical assistant, and x-ray technologist. Proprietary schools are privately owned, often organized as a corporation, governed by a board of businessmen and -women, and are in the business of providing post-secondary career and technical education for a

profit. Proprietary schools are approved or regulated by accrediting agencies (e.g., Accrediting Council for Continuing Education and Training, Accrediting Council for Independent Colleges and Schools) that accredit institutions on such quality input factors as learning resources available, up-to-date equipment, curriculum, faculty qualifications, financial resources, and the nature and quality of the student body. Outcomes factors include job placement and retention rates, employer and student satisfaction, competencies acquired and demonstrated, and general effectiveness of the program.

Vendor certification programs are designed by vendors themselves, and based upon industry standards, skills and knowledge needed, typical problems to be solved, and a level of performance that must be met. Certification is awarded by a vendor following the “passage of an exam benchmarked to predetermined occupations or professional standards” (Carnevale and Desrochers, 2001, p. 19).

Vendor certification programs have been more predominate in two-year technical and community colleges or proprietary schools. However, increasingly vendors such as A+, CISCO, National Automotive Technicians Education Foundation, Novell, and Oracle are offering certifications to high school students. Fifty-two percent of vocational high schools and 27% of comprehensive high schools report offering vendor certification programs (U. S. Department of Education, 1999a).

Human resource development (HRD) is a process of developing human expertise through organizational development and personnel training and development. HRD positions are available in virtually every economic sector in the United States, and are usually organized into training and development, quality improvement, career development, employee assistance and benefits, technical or technology support, or other divisions. With a background in curriculum development, teaching methods, adolescent and adult development, technology, and assessment, CTE teachers are prepared to identify and provide HRD support and services to meet the needs of the workforce.

3. CAREER AND TECHNICAL EDUCATION REFORM EFFORTS

There are several recent influences that have converged to influence programs and curriculum in secondary and postsecondary schools and are reforming the delivery systems for career and technical education in the United States. The essential principle underpinning programs being newly planned or reformed and then implemented in the 21st Century is that the

content knowledge and delivery for CTE courses should focus on what is essential for students to know and be able to do to negotiate well in modern workplaces and to continue to learn throughout their lives.

3.1 Tech Prep.20

In 1990, the Carl D. Perkins Vocational Act of 1984 was reauthorized and added funding for Tech Prep education programs. The fundamental premise of Tech Prep was to respond to the needs of high school students who were often identified as the neglected majority. These were students from the middle quartiles who typically did not go on to complete a baccalaureate degree or graduate from high school with sufficient skills to succeed in the workplace over the long term. Tech Prep brought faculty together from secondary and postsecondary institutions to (a) collaborate on curriculum to avoid repetitive coursework and (b) to develop formal articulation agreements to facilitate students' high school transition to postsecondary programs. One of the benefits of Tech Prep has been the increase in the number of high school students who have completed a technical program of study and then continued into postsecondary education. Tech Prep programs have been characterized as including high academic standards, integration of academic and technical education, and as being among the best in quality teaching and learning experiences.

3.2 Curriculum Integrations

In 1990, the Carl D. Perkins Vocational Education Act of 1984 also mandated the integration of vocational and academic education. The primary call was to increase academic rigor (math, science, communications) in CTE programs. Several approaches to curriculum integration exist and key features include:

- encompassing all of the academic areas – math, reading, writing, science, and social studies in career and technical studies,
- including both applied and academic skills in each academic area, and
- teaching academic knowledge and skills in a vocational context, not just in a vocational education class. (Center for Law and Education, n.d., para. 3)

Academic subjects most often reporting integration with CTE subjects are English, mathematics, and science; with social studies integrated less frequently. Collaboration between academic and CTE teachers is critical to curriculum integration. The extent of collaboration has varied from relying on workplace examples from CTE teachers to enrich the academic

curriculum to team planning where two more or more teachers—one from CTE and another from an academic area—work collaboratively to plan for curriculum integration. Changes in organizational structures to facilitate curriculum integration include schools organized around career academies or schools implementing new career clusters and academic and industry skill standards.

3.3 Secretary's Commission on Achieving Necessary Skills (SCANS)

In 1991, the Secretary's Commission on Achieving Necessary Skills (SCANS) researched the general skills that our nation's young people need to succeed in the world of work (U.S. Department of Labor, n.d.). Three fundamental skills (i.e., basic skills, thinking skills, personal skills) and five workplace competencies (i.e., use of resources, interpersonal skills, acquiring and using information, understanding systems, and use of technology) were identified as essential areas that students needed to be prepared in as they pursued postsecondary education or entered the workplace. Implementing SCANS has required teachers to infuse the competencies and skills into new or existing curricula and place emphasis on contextual teaching and learning by drawing on examples and projects from the real worlds of work, community, government, and business and industry.

3.4 School-to-Work

The federal School-to-Work Opportunities Act (STWOA) was passed in 1994 as an education reform effort that evolved out of years of studies indicating that the United States lacked a system that connects education with employment for those mid-level careers that require some postsecondary training or education but not a traditional four-year college degree. The legislation called for the creation of coherent systems in states, regions of the states, or partnerships of school systems and their communities that link school-based learning characterized by high academic standards to work-based learning that leads to industry-recognized credentials. These two types of learning were to be linked through connecting activities in the form of career majors, contextual learning, and increased career guidance and counseling. Activities were to begin in middle school (grades 6-8), to be continued through high school, and to culminate in postsecondary training or education and ultimately, productive work.

One basic element underpinning STW curriculum and instruction was to shift from teacher-centered pedagogy to learner-centered approaches. This

required actively engaging students in the learning process and applying academic learning to learning experiences outside the classroom. A second element was to underpin education reform in the nuances of the new economy, which futurists, economists, and the business research community all conclude requires higher levels of learning for most citizens.

STW efforts in the United States have resulted in a 38% increase in employer involvement with school activities, including curriculum and instruction since 1997 (Hulsey and Van Noy, 2000). STW efforts have resulted in improved high school attendance, grades, and graduation rates, and contribute to students' career preparation through career exploration activities and work-based learning experiences. Legislation funding for the STWOA ended in 2001, but the impetus and activities emanating from STW continue as a part of school reform initiatives throughout the country.

4. CONDITIONS FOR TEACHERS IN HIGH SCHOOL CAREER AND TECHNICAL EDUCATION

Average starting salaries for a beginning CTE teacher with a bachelor's degree and no experience range tremendously throughout the United States. Department of Education data have cited academic year or 9 month beginning salaries as high as \$31,000 and as low as \$21,000 (U.S. Department of Education, 2002c). Public school teachers at the highest level of the salary schedule earn an average base salary of \$48,000 annually. A teacher's position on a school district's salary schedule is usually determined by degrees obtained, number of years teaching experience, and completion of continuing education activities. CTE teachers often receive additional or "extra" compensation for extended day or extended year contracts by supervising students in cooperative education or other on-the-job training programs after school hours and/ or during summer months, teaching adult education classes, or sponsoring youth organizations. Contracts specifying terms of employment are typically issued for one academic year and continue for the number of years specified by state law to obtain tenure. Contract terms for CTE teachers vary widely throughout the 50 states and the many school systems. Most contracts include some conditions requiring teachers to participate in professional development or continuing education, at least until they earn tenure. Tenure in the nation's public schools varies from state to state and from school district to school district, but usually is awarded after a probationary period of three years. Once a teacher obtains

tenure, the contract runs continuously until the teacher resigns, retires, or is dismissed for cause.

High school CTE teachers instruct an average of five, 45-50 minute classes per day, although there are many variations of this schedule. Some teachers in vocational high schools will teach students in laboratories or “shops” for 2-3 hours at a time (“block schedule”) several days a week. CTE teachers typically average 25 students per class, which is lower than typical non-CTE classes. Classes taught in labs or “shops” often average 15 to 20 students depending on the number of workstations available (U.S. Department of Education, 2002a). Teachers are typically required to be in school an average of 37.5 hours per week. Full-time CTE teachers average 3 hours per week of participating in school-related activities (e.g., study hall supervision, coaching, club sponsorship) and 9 hours per week in school-related activities not involving students which include class preparation, grading papers, parent conferences, and attending meetings (U. S. Department of Education, 2002c).

5. SUPPLY AND DEMAND OF HIGH SCHOOL CAREER AND TECHNICAL EDUCATION TEACHERS

The CTE secondary teaching force has declined since the early 1980s. Student enrollment, pupil-teacher ratios, and course-taking patterns are common indicators of demand for CTE teachers. In all indices, the United States took a significant downward turn throughout the 1980s and 1990s in its high school CTE programs. For example, in 1998, students earned 4.0 credits in CTE courses of the total numbers they completed for high school graduation, compared to 4.6 credits in 1982 (U.S. Department of Education, 2002a).

Indicators for the supply of CTE teachers include the number of new teachers being certified each year, the number certified who enter the profession, and the number leaving the profession. Again, the 1980s and 1990s witnessed a significant decline in the CTE teaching force. Many colleges and universities closed their CTE teacher education programs; fewer CTE college graduates with certification chose to teach, but rather, went to work in industry; and large numbers left teaching – some reports citing as much as a 50% teacher attrition rate within the first five years. Overall supply of and demand for CTE teachers can also be directly impacted based upon the number of reported teaching vacancies. And again, various state-level and some national reports cited the large number of CTE

high school programs that were closed during the last two decades of the 20th century (Guarino, Brewer, and Hove, 2000; Lynch, 1991; 1997).

The good news is that the downward trend may be reversing itself. Anecdotal evidence and some state-level data indicate that the demand for CTE teachers is increasing due to such factors as (a) increased numbers of students entering high schools; (b) more college prep students choosing to take electives in CTE programs; (c) better, improved, or new CTE programs that are attractive to students; (d) the recognition by students and parents that all high school students need some work skills to enter into a career path or a good job; (e) some states or local school districts have eliminated the general curriculum and thus forced students to choose a college prep or CTE program of study; and (f) the influence of several national or federal initiatives — School-to-Work Opportunities Act of 1994, Tech Prep, integration of academics into CTE courses, and technology infusion into the schools and curriculum.

The federal Department of Education estimates that schools will need to hire more than 2 million new teachers in the next decade due to teacher retirements and increased enrollments. Shortages are most acute in urban and rural disadvantaged districts. Further, shortages are not uniform across fields. The greatest need is in special education, and there are also acute teacher shortages in science, mathematics, and some programs in CTE. Most states do not maintain an adequate database to report teaching vacancies to allow an analysis of the supply of and demand for CTE teachers from a national perspective.

6. PREPARATION OF CAREER AND TECHNICAL EDUCATION TEACHERS

The best, most effective way to educate and prepare teachers in the United States, especially career and technical teachers, continues to be debated. The literature has been replete with studies and reports proposing new or reformed requirements for state certification or licensure, standards that prospective teachers must meet to be approved to teach, new structures to prepare teachers that should be implemented, specific courses and experiences with children prior to licensure that must be completed, scores on standardized tests that should be achieved before an individual is allowed to teach, degrees and college majors that must be mastered, required hours of industry experience (for CTE teachers) that must be acquired, and on and on. Many professional associations, education reform groups, political action forces, and others regularly weigh in on the subject and offer plenty of

advice to state teacher regulation boards and to colleges and universities on how to best certify and prepare teachers.

6.1 The Landscape for Teacher Certification and Licensure

All teachers in the 50 United States must meet certain state requirements prior to being issued a license or certificate to teach in public elementary and secondary schools. Each state has rules of certification prescribed by that state's governing board of education. This certification authority reflects the beliefs that the education of children and youth should be safeguarded by requirements governing qualifications of teacher applicants and that the licensure of teachers is, indeed, in the purview of the public good. By way of clarification, the term certification²⁴ is usually used to refer to the entire range of policies, procedures, and practices employed to award the credential – a license – to teach in public schools. The license is the document or “permit” used to identify the teaching credential. In effect, one must be certified (by documenting successful completion of the requirements and processes) to obtain a license (permit to teach).

Certification policies and procedures vary widely throughout the 50 United States. All states will set minimum requirements – such as good health, no criminal record, possibly U. S. citizenship, and some sort of determination of a predisposition to work well with children or youth. Generally, all teachers, except those in certain fields identified with CTE, are required to have earned a baccalaureate degree. Some states are requiring all teachers to earn a minimal score on a test(s) of academic achievement. Typically, the Praxis series from Educational Testing Services (2003) is used. Praxis I focuses on basic academic skills (reading, mathematics, writing) and is often administered prior to students' admission to pre-service teacher education at a college or university or, if being prepared through some alternative route, prior to being issued a state teaching license. Some states also require a minimal score on Praxis II, which focuses on subject-specific assessments (e.g., physics, biology, business education) and principles of teaching and learning. This is usually required at the end of a teacher education program or prior to award of an initial teaching license. Praxis III is a classroom performance instrument for assessing actual teaching skills and classroom performance and is usually administered by the end of the teachers' first year of teaching.

State certification requirements for high school career and technical teachers have typically been much more flexible than for academic or elementary school teachers. Nearly all states allow a special category for certifying trade, industry, and health occupations teachers by substituting

years of work experience in place of a college degree. In fact, there are only three states that absolutely require a baccalaureate degree and seven others which require an associate (i.e., 2-year) degree to begin to teach a trade or health subject. At least 43 states will permit trade and health teachers to substitute work experience—usually requiring at least 2 years as a minimum—for any college-level preparation. Five states do require trade and health teachers to earn a baccalaureate degree before they are fully certified (Lynch, 1998). Some states also require prospective trade teachers to pass an occupational test of competency, such as one or more of the 170 written or performance assessments of technical skills administered by the National Occupational Competency Testing Institute (<http://www.nocti.org>). Most states require teacher applicants in all other subjects identified with CTE to hold a baccalaureate degree but they do permit a route into teaching that does not require traditional university teacher preparation.

Thus, there are two main avenues for career and technical teachers in the United States to acquire certification and obtain an initial license to teach: (a) traditional pre-service teacher education at a college or university or (b) an alternative route that may have varying structures and pathways. In addition, there are many forms of in-service, professional development that are available in most places for most career and technical teachers through either graduate studies at colleges and universities or state or school system-level staff development. These forms of teacher education will be discussed in the remainder of this section.

6.2 College and University Pre-Service Teacher Education

Throughout most of the 20th Century and through to today, the prevailing model to prepare elementary and high school teachers in the United States was and is for students to attend college, earn a baccalaureate degree in education – sometimes in a specific subject such as mathematics education, elementary education, or agricultural education. Today, the typically required curriculum for a career and technical teacher education student completing a baccalaureate degree at a college and university in the United States consists of 124 semester credits, roughly split into three categories: subject matter, general education, and professional education. The subject matter is typically offered through a professional school (e.g., agriculture, technology, business), general education through a college of liberal arts, and professional education courses in an education college or department. As for professional education courses, Bruening, Scanlon, Hodes, Dhital, Shao, and Liu (2001) found that students typically were required to complete semester credits in curriculum development, history and philosophy of

education and/ or vocational education, integration strategies and techniques, methods of teaching, program planning, technology, and to participate in field-based experiences.

Colleges and university teacher education programs typically have institutional approval meaning that the state has approved the education unit to prepare teachers in compliance with state certification requirements. Students who successfully complete all program requirements from a state institutionally approved²⁷ program are declared certifiable and can be issued an initial state license to teach in the subject area(s).

In addition to state approval, about half of the nation's colleges or schools of education are also nationally accredited by the National Council for Accrediting Teacher Education. NCATE uses a peer review process that education schools and colleges undergo to determine that their teacher preparation units and programs meet or exceed professional standards of quality. To be nationally accredited, all teacher education programs (including career and technical teacher education programs) and their students and graduates must be approved through a college, school, or department of education and meet standards in six areas. Two areas relate to student performances: (1) candidate knowledge, skills, and dispositions and (2) candidate assessment system and unit evaluation. Four standards relate to the capacity of the unit in: (3) field experience and clinical practice; (4) diversity; (5) faculty qualifications, performance, and development; and (6) unit governance and resources (National Council for Accrediting Teacher Education, 1997-2003).

In addition to state and NCATE standards and guidelines, colleges and universities are giving increased attention in their pre-service teacher education programs to the work of the Interstate New Teacher Assessment and Support Consortium (INTASC) (1992). INTASC, established in 1987, has developed research-based standards as a way to evaluate whether teachers have achieved the teaching competency necessary for initial licensing as well as for preparation and induction into the profession. The 10 core standards require novice teachers to demonstrate competence in 10 areas: (1) content knowledge and ability to create age appropriate and meaningful learning experiences to teach the content; (2) knowledge of how children learn and develop; (3) ability to work with diverse learners; (4) use of diverse instructional strategies to develop critical thinking, problem solving, and performance skills; (5) use of instructional strategies that create a positive learning environment; (6) use of effective verbal, nonverbal, and media communications; (7) ability to plan and integrate instruction based on content knowledge; (8) use of formal and informal evaluation strategies for the continuous intellectual, social, and physical development of the learner; (9) ability to develop as a reflective practitioner who continually seeks out to

grow professionally; and (10) participant in the larger community to support students' learning and well-being. The core standards are currently being translated into standards for discipline-specific teaching in mathematics, special education, science, arts, and foreign language. Specific standards are expected soon in English language arts, social studies, and elementary education. No plans have been announced to produce specific initial standards or performance assessments prior to awarding an initial teaching license in CTE fields.

6.3 Alternative Routes to Teaching

Currently in the United States, 45 states offer some form of alternative route to teaching in all subject areas, including elementary education (U.S. Department of Education, 2002d). Alternative routes to certification have primarily been implemented to broaden the pool of prospective teachers while also helping states address continuing concerns about teacher education, teacher development, professionalism, and retention (Roach and Cohen, 2002). They are being designed to attract and hold a segment of the population not currently engaged in education.

In its broadest sense, alternative certification is the term applied to policies, programs, and practices designed to certify teachers who have not completed an undergraduate degree in education. The definition of alternative certification varies among the states and encompasses a wide range of practices, from emergency certification given to those with no teaching background or training to programs designed to license or certify individuals who have an undergraduate degree in the field in which they plan to teach, for example in science or history, and college courses and experience in education. Most subject areas, with the exception of some of those identified with career and technical education, will require a baccalaureate degree as integral to any form of teacher certification. In analyzing survey data from state departments of education about alternative certification for CTL teachers, Ruhland and Bremer (2002) found that various states are resorting to several routes in order to certify teachers for career and technical fields. Across the country, the most prevalent routes do not require university course work in teacher education. However, one common route does indicate that the emergency-certified teacher will take "traditional teacher education courses required for full certification."

There isn't a lot known about the substance of teacher preparation through alternative routes to career and technical education nor whether or not it ever has been successful in producing teachers who are effective with students in classrooms. The one exception has been the longstanding practice in the United States of certifying trade and industrial teachers and some

health teachers who did not hold baccalaureate degrees. In reviewing nearly 40 studies as a prelude to their report to Congress, Boesel and McFarland (1994) reported in the National Assessment of Vocational Education, that the practice of certifying teachers who do not have at least a baccalaureate degree should be discontinued. Further, Lynch concluded (1996) that the “survival skill training” that is typically provided to T&I and other alternatively certified teachers is not sufficient for most trade and other teachers, especially if they have not had college-level education and college preparation in academic and subject area content.

Given the anticipated shortage in the United States of teachers in elementary, academic, and career and technical education in the years ahead, no one seriously questions the fact that most states and/ or local school districts will need to continue to provide some form of alternative route to teacher certification. The cumulative research from various formative and summative studies indicates that any template for a comprehensive system of alternative teacher development should incorporate techniques known to correlate with good teacher education programs. Some of these techniques include requiring a solid grounding (i.e. a degree) in the subject(s) being taught, providing extended clinical experiences with good teachers in good schools, providing on-the-job mentoring from master teachers in the same subject area as the novice, rigorous screening of applicants before acceptance into an alternative certification program, and solid assessment practices with the novice teachers (e.g., use of Praxis III). Further, it has been proposed that extensive mentoring and advising will need to take place to enhance all beginning teachers’ odds at remaining in teaching. States will need to address the factors that are causing educators to leave teaching or the problems identified with teacher preparation—whether traditional or alternative—will only be exasperated.

7. TEACHER DEVELOPMENT

Current federal legislation providing funds in support of state and local programs of CTE permit dollars to be used for professional development of teachers. These funds are intended to be used to improve teacher’s knowledge and skills and, theoretically, should aid in preparing teachers to achieve the goals delineated in the legislation. For example, in recent years, professional development has been provided in most states and countless school systems to achieve the goals identified with Tech Prep, inclusion of school-to-work activities in schools, improving programs of CTE, introducing teachers to career clusters and career pathways, improving diversity, integration of contextual teaching and learning, integration of

technology into the curriculum, and inclusion of work ethics instruction and SCANS skills. Teachers have returned to industry for internships, participated in company training programs, interviewed employers and employees about new knowledge and skills in the workplace, and have increasingly sought out advice from business persons on education-related matters.

A major initiative in the U.S. that has advanced the professional development of many teachers, including career and technical teachers, is the National Board for Professional Teaching Standards (NBPTS). Created in the early 1990s, NBPTS has established a long-term, ambitious agenda in order to accomplish a three-part mission: to (1) establish high and rigorous standards for what accomplished teachers should know and be able to do, (2) develop and operate a national voluntary system to assess and certify teachers who meet these standards, and (3) advance related education reforms for the purpose of improving student learning in U.S. schools. Underpinning their work in standards development for nearly 30 fields or subject areas in U.S. schools – including CTE – are five core propositions: (1) Teachers are committed to students and their learning, (2) Teachers know the subjects they teach and how to teach those subjects to students, (3) Teachers are responsible for managing and monitoring student learning, (4) Teachers think systematically about their practice and learn from experience, and (5) Teachers are members of learning communities (National Board for Professional Teaching Standards, 2002).

In 1997, 13 standards from which to assess highly accomplished teachers in CTE were approved by the NBPTS. The 13 standards were clustered into 4 broad areas that collectively represent accomplished teaching of CTE students, age 11 – 18: (a) creating a productive learning environment, (b) advancing student learning, (c) helping students make the transition to work and adult roles, and (d) improving education through professional development and outreach. Each of the 13 standards states one aspect of accomplished teaching and is couched in terms of observable teacher actions that have an impact on students. Teachers who successfully ‘pass’ the national assessment in CTE are evaluated to be among the best the profession has to offer, based on assessments of what it is they know and are able to do to ensure that their students are learning. Teachers must have at least 3 years of classroom experience and hold an earned baccalaureate degree before they are eligible for national assessment and certification.

7.1 Graduate Education

About 45% of U.S. career and technical teachers hold a post-graduate degree from a college or university (Guarino, Brewer, and Hove, 2000).

Little current information at the national level is known about the specific degree structure of graduate programs in CTE, how many universities offer graduate programs in CTE, and what standards or curriculum frameworks are used to underpin graduate degrees. Presumably, many of the colleges and universities that continue to offer pre-service teacher education programs (Lynch, 1991; Bruening et al., 2001) also offer graduate programs targeted to CTE. Historically, state colleges that served a particular area of a state, especially those developed from normal schools, offered master's degrees in education. The land-grant research-oriented universities offered not only master's degrees, but also a doctorate of education and/ or a PhD in education. However, there is an increasing trend for regional colleges to not only offer master's degrees, but doctorates as well.

The University Council for Workforce and Human Resource Education (UCWHRE) currently consists of 18 U.S. universities that provide leadership, research, service, and instruction in CTE and in human resource training and development. UCWHRE is committed to studying significant issues in CTE in the United States and is concerned with the professional preparation of individuals preparing for roles in CTE and HRD (University Council for Workforce and Human Resource Education, 2001). Membership is limited to universities that (a) have a doctoral program with an emphasis in CTE and HRD, (b) are supported by graduate faculty with expertise in those areas, and (c) have faculty who provide leadership and contributions to the field of CTE and HRD.

One other possible indicator of graduate quality in CTE is the annual report of the best graduate schools by U.S. News & World Report. Each year, U.S. News evaluates graduate programs in various field of education. According to the magazine's editors (2001), rankings are based on two broad types of data: (a) expert opinion about program quality and (b) statistical indicators that describe the strength of a school's faculty, its research, and the performance of students both as they enter and leave. Data is collected by surveying education programs, academics, and professionals working in the field. In its 2002 edition, the magazine identified the top ten graduate programs in vocational and technical education (i.e., CTE) as follows:

- Ohio State University, Columbus
- Pennsylvania State University, University Park
- University of Minnesota, Twin Cities
- University of Georgia, Athens
- University of Illinois-Urbana Champaign
- Virginia Polytechnic Institute and State University, Blacksburg
- Oklahoma State University, Stillwater
- University of Missouri, Columbia

- University of Wisconsin, Madison
- Colorado State University, Fort Collins

8. ISSUES AND CHALLENGES

Throughout this chapter, we have attempted to describe the state of CTE as it exists, generally, in 2002 in the United States. We focused primarily on relatively recent directions for CTE, especially in high schools and in teacher preparation, and discussed influences that have led to some creative reform of programs throughout the country. There is indeed much to be proud of in American education, both secondary and postsecondary. More and more students today, both in numbers and as a percentage of the total youth and adult census, are graduating or have graduated successfully from high school and are transiting into postsecondary education. Nevertheless, there are very significant issues related to CTE and the preparation of its teachers. Three will be discussed briefly in this final section.

8.1 High School Quality

A considerable debate in the professional literature and policy arenas concerns the role and quality of CTE in the U.S. high schools. Indeed, there are many CTE programs that are exemplary with solid standards, increased integration of academics, quality instruction, appropriate learning experiences for students, outcomes that result in good job placements and/ or entry into postsecondary programs, and other positive indicators. Supported by federal funding for CTE, Tech Prep, and School-to-Work activities, many programs have improved curriculum and instruction and have forged articulation agreements with postsecondary technical and community colleges. However, there are also programs that are mirrored in a 20th century model of factory, farm, and homemaking. There are high school programs that are “dumping grounds” for students who cannot or will not do what is necessary to master appropriate academics. Equipment, curriculum, and other instructional resources are limited or outdated. Some school administrators continue to use high school CTE programs as dumping grounds for students who need to be kept in school, kept busy, and kept out of trouble.

The debates among policy groups, business people, and educators about directions in CTE and about the high school curriculum continue. There are a few influential groups and individuals that recommend elimination of all high school CTE and shift technical and job-skill training to postsecondary institutions. Many advocate that the high school curriculum ought to focus

only on academics and that its sole purpose is to prepare students for postsecondary education. There is a strong push in the United States to raise standardized test scores of academic achievement—especially in math and science—for all students. There is little data or substantive research findings that conclude that CTE adds value in raising students' test scores on standardized tests. Thus, the direction offered by many is to increase student enrollment in tougher academic courses in math, science, and languages. Other studies point out that enrollments in Tech Prep programs of study and some school-to-work activities have shown positive results in other measures of student achievement, such as improved graduation rates, less tardiness and absenteeism in classes, improved grade point averages, increased matriculation of high school students into postsecondary education, and better engagement of students with school subjects.

Other influential groups call for more integration of academic and “vocational” education; that is, more merging of the hand and the mind. Many encourage some of both: some employment preparation in high school through CTE as well as tough academics whereby the students are prepared for postsecondary education while concomitantly acquiring job skills and experience. A few suggest limiting high school CTE to those students who are economically, culturally, socially, or academically challenged. Others say high school CTE has outlived its usefulness; all students must be prepared for postsecondary study and the best way to prepare them is through a solid academic curriculum. No doubt the debates will continue throughout the first decade of the 21st century, and federal and state legislative initiatives will favor one or the other of the dichotomies or find some compromise somewhere on a midpoint in the continuum.

8.2 Teacher Preparation

To teach in elementary education, high school academic subject areas, and several programs identified with CTE (e.g., agriculture, business, family and consumer sciences), a baccalaureate degree is almost universally a prerequisite to obtaining a teaching license in every state in the United States. In trade and industrial education and in the many specialties identified with health occupations, experience in industry or a medical field is often considered sufficient prerequisite for teacher licensure. Even with a baccalaureate degree as a foundation and as an absolute requirement, the debate rages around alternative teacher preparation programs and their impact on teacher quality and student achievement. The most significant questions seem to be: Where do alternatively certified candidates come from and what knowledge and experiences do they bring to teaching? Do they know enough and do they know how to teach it? How should they best be

mentored and taught in the time given to teach them prior to licensure? What is critical to be taught in that short time frame to prepare them to assume teaching responsibilities in real classrooms? In what types of schools and districts are they being placed? Are they being successful with students in teaching them high standards, and in teaching the knowledge and skills students need for employment and/ or entering into postsecondary education?

Within the traditional teacher preparation programs in colleges and universities, challenges are also abound. Many colleges of education are cited as being poor of quality in student demographics (e.g., populated by students with low standardized test scores and/ or who find the curriculum easier than that offered in professional schools or in colleges of arts and sciences); poor of quality in curriculum and instruction – often providing insufficient substance in the subject matter and insufficient clinical experiences with students; and often lacking in financial resources, equipment, technology, and adequate depth and breadth of faculty to produce quality teachers. Many are accused of loading up teacher education students' programs of study with methods courses at the expense of solid academic, subject matter courses.

8.3 Conditions of Teaching

A final challenge mentioned herein is the prevailing perception that the conditions for teachers in many U.S. public schools are less than exemplary. Studies show teachers are demoralized by large classes, students who are unmotivated to learn and frequently absent from classes, CTE courses that are often used as “dumping grounds” for low achieving students, facilities and equipment that are just too outdated to be effective in teaching students appropriate job skills and knowledge, and poor salaries. Teacher turnover seems high. Teachers complain of an overemphasis on standardized test scores which result in teaching by rote memorization exercises and drills to the exclusion of creative instructional methods that teach students to solve problems, collaborate with others to complete assignments, engage in work- and community-based learning activities, integrate knowledge from various disciplines — including CTE — into completion of extensive projects, and have many samples of their work assessed through authentic means.

To bring about the initiatives proposed in various policy-influencing and legislative initiatives surrounding CTE, increased emphasis undoubtedly needs to be placed on improving professional development and other working conditions for teachers. The challenge then becomes determining whether states and local school districts are willing to invest resources to ensure that quality professional development is available to teachers on an

ongoing basis and followed up with appropriate support to insure that the teachers are learning from it. And, of course, educators claim that the continuing call to raise teacher salaries, provide adequate support in the classrooms—especially targeted to poor readers and students who are otherwise behind grade level, and generally improve the environment in schools has largely gone unanswered.

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Appendix

Table 13-1. Chronology of past international research and documentation measures on Vocational Teachers

Study/Publication/ Project	Length	Region(s) or countries covered	Content: Focus/Methodology/ Aims/outcomes
ILO 1964	250pp.	13 industrially developed countries	country reports by national authorities; comparative synthesis; Recommendations for standards
Geminard 1971	247pp.	France; United Kingdom; Germany; Italy	individual study by one author with comparative overview; academic study
Mitter et al. INTERAGLA	country reports à 40pp.	9 industrialised countries from the eastern and western block	descriptive country studies by national researches or team of researchers;
UNESCO 1977	250pp.	examples from industrialised countries and developing countries (over 30 altogether)	country reports by national authorities; Questionnaire; two stages; expert opinions; typologies of teachers and trainers and of teacher education institution; knowledge transfer to developing countries

continued

Study/Publication/ Project	Length	Region(s) or countries covered	Content: Focus/Methodology/ Aims/outcomes
Tarrou 1993	78pp.	10 EU-countries and Norway	Working group 3 of the Association for Teacher Education in Europe (ATEE) Focus on in-service education and training; comparative volume based on national reports
Toth 1995	89pp.	8 EU countries and Norway	One chapter on comparative questions; based on a questionnaire and the other articles in the Volume round table report; contributions by single authors; summarising and comparative introduction
UNEVOC 1997	107pp.	different socio- geographic regions Commonwealth; Caribbean; Asian Pacific; Africa; Poland	country reports by experts or groups of experts; reciprocal review
Cedefop	4 Volumes à 130pp.	EU Member States	national reports on selected topics by the involved researchers; common project cornerstones for collaboration; steps to the development of a European master programme for VET-Professionals
EUROPROF	Several publications in Journals	14 EU countries	case studies and country reports; Follow-Up of EUROPROF with the aim of the establishment of a European Master Degree/University Institute; selected country level reports and memorandum will be finished in 2001
TT Net EUROFRAME	Website/ dossiers	EU Member States	

Table 13-2. Outcomes of the ILO Study

Recruitment	<p>Vocational Teachers should be given the same status and the same remuneration commensurate with those accorded to staff in general education;</p> <p>Not possible to suggest a specific line of training universally applicable</p> <p>But the following qualifications should be achieved:</p>
Training programme and Content	<p>a). Level of general education should be considerably higher than that acquired by the average vocational school student</p> <p>b). technical education and scientific instruction corresponding to that of a higher technician</p> <p>c). considerable practical experience of working conditions, safety measures, ergonomics and the organisation and practices of industrial production and maintenance operations</p> <p>d). knowledge of philosophy and principles of education as well as general and applied pedagogy: planning training programmes; general and industrial psychology; physiology and sociology; special regard to the youth at work and social institutions of industry;</p> <p>e) advanced training in the didactic methods of teaching technical subjects with special emphasis on teaching based on experimentation</p> <p>Because of shortages there should be in-service measures to get those qualifications</p>
Continuing Training	<p>Keeping up-to date with developments of theoretical aspects of their subject; industrial practices and teaching techniques</p> <p>Measures proposed:</p> <p>Release for work in industry or special courses</p>
Research	<p>Facilitation of distance learning and participation in conferences</p> <p>Research should be carried out by teaching staff qualified in the scientific and technical specialisations</p> <p>Research should be result of teamwork of persons from industry, education and persons concerned with the theoretical side of the technical subject and the psychology of learning</p>
Measures of co-ordination	<p>Better integration of the theoretical and practical learning has to be gained</p> <p>Teacher education has to be articulated with other policies of general and technical education</p> <p>More extensive use of combined training in school workshops which blurs the difference between practice and theoretical teachers</p>

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