

## Vocational teacher education in Germany – structures, problems and reform outlook

### Introductory Conference

#### 1. Preliminary note

This paper provides (1) a structural overview of the German vocational teacher education, presents (2) main problem areas and roughly introduces (3) our national research project intended to be conducted subsequent to our problem perception within the PROPETO project.

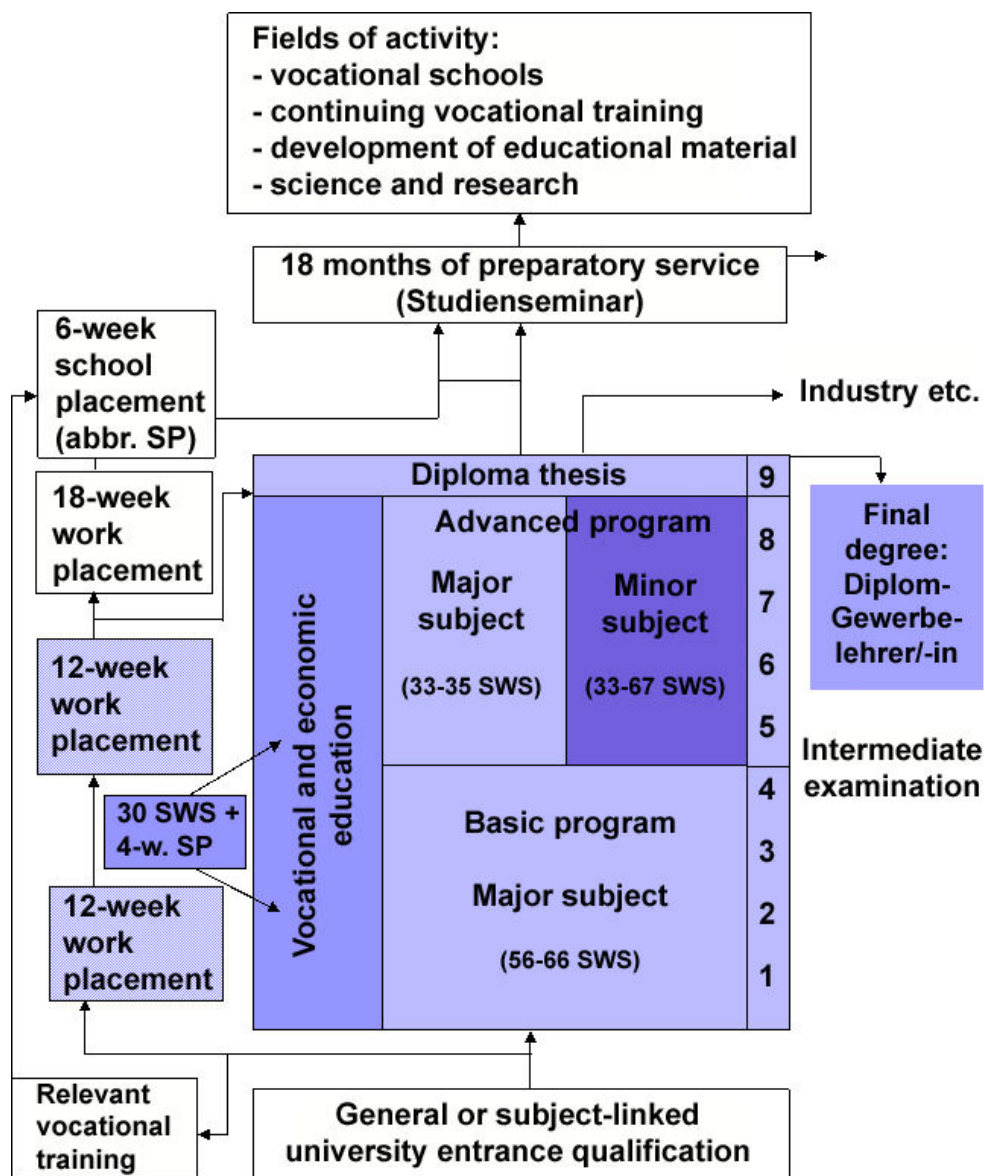
#### 2. The basic structure of the vocational teacher education in Germany

The German vocational teacher education in its basic form is divided into two stages. The first stage normally spans over 9 semester and provides the academic background in at least two subjects (e.g. an engineering and a general education subject), complemented by studies of vocational and economic education. In the 18 to 24 months of the second stage, the so-called *Vorbereitungsdienst* (preparatory service), theory and practical application are combined in order to advance the teaching competencies of the future teachers. Seminars, as well as individual guidance and training, support them to acquire the skills necessary for teaching independently on the required high level. This basic structure applies throughout Germany, however, with regard to details, considerable differences occur among the federal states or universities.

Lateral entry to the preparatory service for the teaching profession is possible in subjects with a teacher shortage. It enables engineers, for example, to directly start working as regular teachers, being pedagogical trained by the *Studienseminar* (the institution responsible for the second stage) for about two years in parallel. Universities normally do not participate in this model.

Some federal states, such as e.g. Baden-Württemberg and North Rhine-Westphalia, re-established vocational teacher education with the participation of the *Fachhochschulen* (technical colleges / universities of applied sciences). Despite the opposition of some universities this model had been turned down in the 1960s.

The following overview exemplary describes the academic education as it is realised in the University of Stuttgart.



It is obligatory for the students to select an engineering major; the minor subject can be chosen among the subjects of engineering, the humanities, natural or social sciences. Besides it is compulsory to attend courses of the third subject, vocational and economic education. The weighting of each subject varies among the different universities. The

University of Stuttgart strongly emphasises engineering, therefore the approximate distribution of *Semesterwochenstunden* (semester hours, abbr. *SWS*) is as follows: engineering major - 90 SWS, minor subject – 50 SWS, vocational and economic education - 30 SWS. Additionally students are required to complete a 10-week placement in school and a 42-week work placement.

Due to the Bologna process B.A. and M.A. degrees are currently introduced in order to adapt German academic degrees to international standards. Some universities were able to complete this process already; the general completion is scheduled for 2009. Apparently the structure of the newly-created programs varies considerably among the universities. At present it is intended that only the M.A. degree enables graduates to take up their teaching profession. However some federal states, such as Berlin, consider employing B.A. graduates, too.

### **3. Main problem areas related to the education of vocational teachers**

The following remarks focus on those problem areas consistently causing reform proposals. Their order reflects the importance we attribute to them.

We consider the following problems to be particularly significant:

- (1) Especially in subjects related to commercial and technical education, the schools repeatedly face problems recruiting a sufficient number of teachers graduating from the basic form of vocational teacher education.
- (2) Numerous evaluation studies depict that students perceive a lack of cooperation between theory and practice. On the one hand it is criticised that the academic theories offer unsatisfactory instruction for practical teaching, on the other hand doubts are expressed that the obtained theoretical knowledge is substantially related to the practical knowledge of skilled workers.
- (3) The improvement of *Fachdidaktiken* (subject-specific didactics) remains inadequate, accompanied by insufficient research results, recruitment problems and unsatisfactory quality of academic course offers.
- (4) Cooperation between the two institutions responsible for the stages of education seems to be problematic, too. A wide range of similar contents, for example, are imparted by both.
- (5) Due to the above mentioned recruiting problems a relatively large number of teachers with degrees other than the final degree of *Diplom-Gewerbelehrer* (see the figure above) is hired. The opportunity is mainly given to teachers of subjects related to *Metall- and Elektrotechnik* (mechanical and electrical engineering). These teachers either enter the preparatory service or are directly employed and pedagogically

trained by the aforementioned *Studienseminar* along with their teaching responsibilities. In the scope of a larger pilot scheme (“inovelle-bs”) a formative evaluation of the different training alternatives was conducted. Yet there is no proven data available about the competence of these teachers. During the last years some federal states recruited about three quarters of their teachers of subjects related to *Metall- and Elektrotechnik* by applying one of these alternative models. From an educational point of view it is particularly questionable whether new scientific educational findings will be accessible to these teachers.

- (6) Subsequent to evaluation studies and vocational curriculum reform processes especially concerned with *Arbeitsprozesswissen* (knowledge related to working processes), the close connection between academic education and engineering has been repeatedly challenged as being inappropriate. Instead, the development of new disciplines, so-called *Berufsfeldwissenschaften* (studies of the vocational field) was demanded. Based on professional requirement analyses these disciplines should have provided the relevant knowledge related to working processes. Combined with some engineering subjects selected according to the requirements of the future vocational teachers, this approach should have led to an improved knowledge base. This proposal is discussed controversially and will probably not be implemented, also due to costs. However, quite a few universities offer engineering programs reduced in level and range, some others introduced special programs for these students. At the University of Stuttgart the future vocational teachers generally participate in the courses actually designed for engineers, mathematicians, physicists etc. No empirical investigation has been conducted to determine the suitable approach in supporting a desirable competence development.
- (7) As some professions like hairdresser or butcher, for example, do not match with any academic discipline, a specific preparation of these future teachers is challenged.
- (8) Vocational teachers in Germany work in a wide range of vocational schools, including schools preparing for vocational training (*Berufsvorbereitung*) or schools for continuing vocational education and training (*Weiterbildung*). Demands concerning pedagogical and professional skills vary considerable. Vocational preparation schemes for under-performing young people mainly pose pedagogical challenges, while schools of more advanced level (*Meister- und Technikerschulen* for example) mainly require a comprehensive technical knowledge. It is legitimate to doubt whether trainee teachers can be fully prepared to meet all requirements of vocational schools. Some federal states, such as Lower Saxony for example, created special education programs for teachers taking care about children with special needs. In these cases the minor subject is replaced by a subject with special focus on pupils with special

needs (*Sonderpädagogik*). Schools, however, prefer a broader education as it allows the flexible use of teachers.

- (9) When the universities took over responsibility for the vocational teacher education in the sixties, they mostly created only one or two new professorships, usually covering the area of vocational studies and economic education. *Fachdidaktiken* (subject-specific didactics) were mostly taught by experienced vocational teachers; until today professorships of subject-specific didactics have not been established to a sufficient extent. Not a single professorship of subject-specific didactics has been installed at the University of Stuttgart for example. Due to the fact that universities attach more importance to other tasks and that there is only a small number of students in each field, a significant improvement cannot be expected in the near future. A lack of resources is the main reason for these different problems, such as the insufficient support of students doing their school placement or the small number of courses especially offered to the future vocational teachers. Some opinions state anyway that these special programs bear the danger of a decreasing education level, contradicting the assumption that comprehensive professional knowledge is fundamental for successful teaching.

This brief overview of important problem areas necessarily remains incomplete. As mentioned in our national project description we will mainly focus on the aspects (2) and (4) in our project.

#### **4. Major goals of our national research project**

Within the bounds of the overall project, which aims at improving teacher education, this partial project pursues the following objectives:

1. Optimisation of teacher education at universities by improving relations between theory and practice
  - a) through implementation and permanent curricular integration of project-oriented parts in the educational program;
  - b) through closer cooperation between the first and the second stage of teacher education. Doing so, we strive for a more consistent curricular match and a more intensive exchange between the two educational stages, e. g. about state-of-the-art insights concerning teaching/learning processes.
2. Summative und formative evaluation of optimisation measures

Summative evaluation will be applied to project-oriented parts of the educational program in order to find out about effects concerning the development of motivation and “pedagogical judgement competence”. Additionally, an all-embracing longitudinal study is planned to record the development of interest in study subjects. Formative evaluation approaches will be applied to all optimisation measures and are primarily supposed to give insights concerning acceptance, player- respectively recipient-specific assessments and further optimisation potential.

3. Identification of educational modules/approaches being developed within the framework of the national pilot scheme program *Inovelle-bs* might be helpful to the project partners and contribute to further improvement of teacher education at German universities. Among others one quality criteria will be the transferability of educational modules/approaches within the national pilot scheme program *Inovelle-bs* and beyond and whether their application is related to specific conditions.