Design of demand-oriented vocational education for modern structures of production and service

Didactic of Vocational Education and Training
Aims of vocational education:

- “[imparting] employability, which combines technical expertise with the general capabilities of human and social nature”
- [developing] professional flexibility to cope with changing requirements in work and society, including the perspective of Europe’s coalescence
- [awaking] readiness for vocational further and continuing education
- [assisting] the ability and willingness for responsible action in the individual life and in public life”

(Standing Staff of Conference of the Ministries of Culture Affairs: General Agreement on Vocational Schools. 1991)
Influence factors of vocational education

- **Economy**
  - Structures in production and service
  - Vocational work
  - Demands on labour

- **Science**
  - Matters of research and research methods in engineering sciences
  - Development of techniques and technology

- **Society**
  - Social needs and social values
  - Idea of man in society

- **Learner**
  - Individuals with needs
  - Cognitions of psychology

Demands on vocational education relating to objectives and organization
What fields of professional activities are in demand from the current production and service structures and how this demand will develop in future?

→ relation to labour market

- development of various sectors in production and services
- development of the technological structure and organization of labour
- demand for skilled labour on labour market

What is the character of work in the respective areas of professional activity and what requirements result out of it on the employees?

→ relation to requirements of work

- work activities within the respective professional fields
- necessary personality dispositions for the execution of the work activities
  - qualifications with relation to the professional activities
  - qualifications which are independent of the work processes
Industrie 4.0

1st: Mechanization, water power, steam power
2nd: Mass production, assembly line, electricity
3rd: Computer and automation
4th: Cyber Physical Systems
Taylorism - Scientific Management

Taylorism:
Division of Labour
Dichotomy of Duties

Job
- Job A
  - Duty₁
    - Task₁₁
      - Step₁₁₁
    - Task₁₁₂
      - Step₁₁₂
  - Task₁₂
    - Step₁₁k
- Job B
  - Duty₂
  - Dutyₙ
  - Duty...

„Modern Times“
FRIELING: components of modern production structures which are relevant for vocational education:

- Process-chain-oriented company organization instead of functional hierarchies
- Customer-orientation instead of product-orientation
- Responsibility for the project/venture and budget instead of hierarchically structured task management
- Working in teams or groups instead of working alone
- Complete operations instead of individual/single acts
- Self-regulation instead of standardized input/guidelines
- Involvement instead of heteronomy
- Continuous improvement instead of hope for innovation.

(cp. Frieling (1993): Das lernende Unternehmen, p.32)
现代化生产结构的特征

- 以过程为导向的组织取代了功能等级制
- 以客户需求为导向取代了以产品为导向
- 项目和预算负责制取代了等级结构性的任务管理方式
- 团队或小组工作取代了单个个体作业
- 完整的行为取代了单一的工作
- 自我控制和管理取代了接受标准化指令
- 参与取代了依赖
- 持续性改善和优化取代了等待改革和创新

（cp. Frielings, Ekkehart: Das lernende Unternehmen.- Hochheim 1993, p. 32）
Criteria for teachers in vocational education under the aspect of structures of production and service

The design of teaching and learning processes in a demand-oriented vocational education requires teachers who have extensive experience in professional practice.

This includes:

- Knowledge of current developments of the structures of production and service
- Knowledge about the nature of professional work in their respective professional fields
- Experience in dealing with the respective production facilities
- Experience in planning, execution and monitoring of professional work activities
- Ability to design work process related teaching and learning
- Mastery of methods to develop key qualifications
Questions about science as influence factor of vocational education

Which subject-matters of engineering sciences are useful as appropriate matters of acquisition for the respective professions?

→ relation to subject-matters of engineering sciences

System of scientific statements of engineering sciences with professional relation (Theories, laws, hypotheses ...)

System of professional scientific act regulatives (Principles, methods, rules, procedures)

System of professional scientific act standards (Directives, standards)
Criteria for teachers in vocational education under the aspect of engineering sciences

The design of teaching and learning processes in a demand-oriented vocational education requires teachers who have:

- comprehensive knowledge of engineering sciences (in relation to the professional field)
- Insight into the importance of subject-matters of engineering sciences for the professional activities
- Competence in suitable didactic simplification of scientific subject-matters
idea of man in the society

Which personality traits should have an ideal personality for the society?

→ Socialization mission of vocational education

Responsible (mature) citizens

- general capabilities of human and social nature
- autonomy in activity
- responsibility in the individual life and in public life
- participation in democratic processes
- autonomous lifelong learning
Criteria for teachers in vocational education under the aspect of society

The design of teaching and learning processes in a demand-oriented vocational education requires teachers who have:

- Awareness of the connection between professional education and socialization
- Knowledge about the relationship of school and professional socialization
- Ability to design target-oriented socialization processes
What individual personality characteristics of learners are to be taken into account in the planning of learning processes in vocational education?

- pre-conditions of the learners
- age-specific psychological characteristics
- individual values, norms, attitudes
- needs of learners

**Implications for criteria of teachers of vocational education**

- Ability to psychological performance and personality diagnostics
- Ability for individual support and advice to students
Assumptions of Act Theory

- activity is a necessary condition to personality development
- activity has to be - cognizant
  - goal-oriented
  → term: act

- individual needs are necessary conditions for acting
  → motive for act

- acts takes place in 3 fields of personality
  - cognitive field
  - affective/emotional- volitional field
  - psychomotor field
  → holistic act

- the basic structure of human acts has the follow components
  - orientation
  - accomplishment
  - evaluation
  → complete act
发展心理学和工作心理学的一些观点

- 通过有意识、有目的的行动可以促进个性的发展。
- 动机驱动行动。
- 行动是认知、肢体运动和情感三个层面的综合。
- 完整的行动 (定向、实施、检测) 促进个性的发展。
Basic didactic relationships

Hortsch, H.: Didaktik der Berufsbildung
Merkblätter zur Vorlesung
Dresden 1994
教学论的基本关系

Hortsch, H.: 职业教育培训的教学论
Merkblätter zur Vorlesung
Dresden 1994
State of the Learner at the Point $t_0$ can be characterised by his/her
• Dispositions of Knowledge, Skills, Demands and Will
• Other internal conditions of the individual

State of the Learner at the Point $t_1$ can be characterised by the changed
• Dispositions of Knowledge, Skills, Demands and Will
• Other internal conditions of the individual

The Lecturer INITIATES by orientating, regulating and evaluating

Hortsch, H.: Didaktik der Berufsbildung Merkblätter zur Vorlesung Dresden 1994
Thank you for your attention

Dresden, July 2016