

**METHODOLOGY OF  
CURRICULUM DEVELOPMENT  
IN VOCATIONAL EDUCATION  
AND TRAINING AND ADULT  
EDUCATION**

Peter Van Engelshoven

Dr Miomir Despotović  
Iskra Maksimović, M.A.  
Aleksandra Pejatović, M.A.

# Introduction

The purpose of education reform is to achieve higher individual and socio-economic efficiency and effectiveness of education and learning. The general goal is represented by adjustments and changes in the structure, organisation and functions of the education system, and particularly in educational and learning content and the ways of their adoption. Modern economy values broad knowledge and skills, flexibility, mixed forms of training, multi-purposefulness, teamwork, problem solving and project-based work.

The overall organization and structuring of the education system, and particularly vocational education system and adult education system, are dominated by three complementary and mutually dependent principles:

- the principle of accessibility,
- the principle of integration and
- the principle of partnership.

Education system is a social mechanism that enables the distribution of knowledge, skills, work competencies, needs and values to all members of the society. Without real and full participation in education system and without the realisation of the right to education there is no full realisation of the right to work and right to participate in social life and all other rights deriving therefrom. Therefore the accessibility of education and learning to all individuals in all periods of their lives is an imperative in education structuring and organisation.

Influenced by lifelong learning concept, necessity and need for learning in adulthood, the traditional educational schemes and structures are being modified in such a way that adult education becomes their integral part. Creation of institutional and organizational preconditions for systematic learning even after the compulsory education period i.e. integration of institutions for further education in the complete education system is inspired by the need to:

- maintain the developmental learning effects and levels achieved in childhood and youth
- open possibilities for further intellectual, social and professional development and
- successfully respond to dynamic socio-economic changes and needs, especially the labour market's needs.

In democratic societies and knowledge-based economies, education becomes a partnership activity and joint responsibility of various actors:

- social partners – the state, employers and trade unions,
- various stakeholders: chambers, professional associations, higher-education institutions, scientific and research organizations, NGOs, the institutions for vocational education themselves and their associations and
- individuals.

Recognition of the principles of accessibility, integration and partnership in education organisation and realization implies (and produces) the diversity of educational and learning institutions and the diversity of means and ways of knowledge acquirement. Various types of educational institutions (I) are integrated in a broad network of institutions and organisations founded by the government, the world of work or non-governmental sector. On the other hand the government, i.e. parliament distributes responsibility for education among different ministries (decentralization), first of all the ministry of education and the ministry of labour, which independently or in cooperation with other social partners establish organisations and agencies that provide support to educational institutions. In the field of vocational education and adult education, educational institutions are firmly linked to the ministry of education and/or ministry of labour, employers and their associations and

trade unions. This link is being established either directly or through national councils and centres for vocational education and adult education. This way of organisation ensures that large numbers of relevant actors take part in defining educational policy and strategy and their implementation, and in defining norms and standards for work and educational and learning programmes.

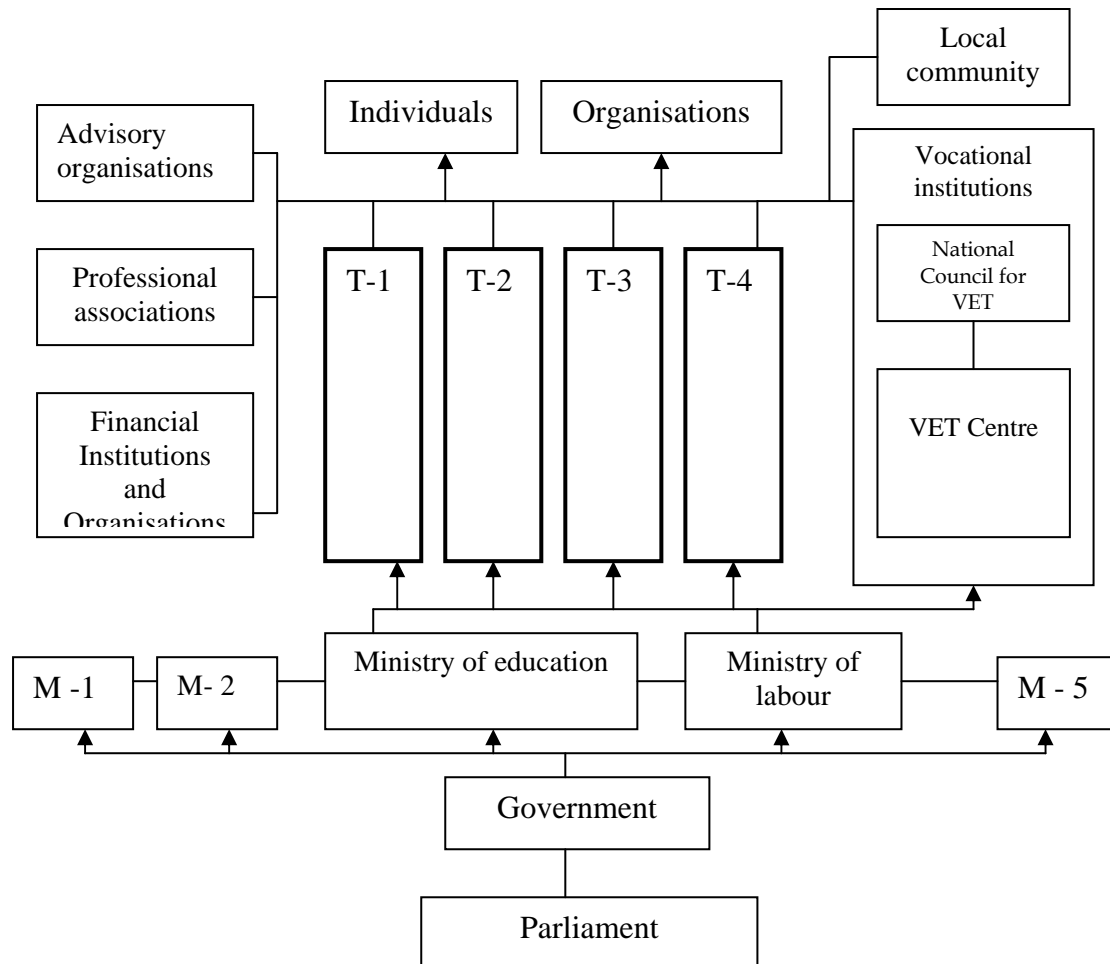


Diagram N°1. A model of the integration of VET and Adult education institutions and organisations into wider social background

Legend:

- T-1 - three and four-year secondary vocational schools
- T-2 - two-year apprenticeship schools
- T-3 - specific forms of adult education and training
- T-3 - postsecondary education

By applying the principles of accessibility, integration and partnership, educational institutions (schools and other organisations for education and learning) are integrated into wider socio-economic background and they become instruments of its development. Curricula and the ways of their implementation are developed with active participation of a larger number of various actors and are intended for different beneficiaries, which results in relevancy and higher efficiency of the education system as a whole.

# I. EDUCATION PLANNING

The following actors take part in curriculum planning and development:

- groups that manage different phases of the planning process, i.e. curriculum development and its implementation and
- groups that have legitimate and authentic interest in the curriculum, its implementation and effects.

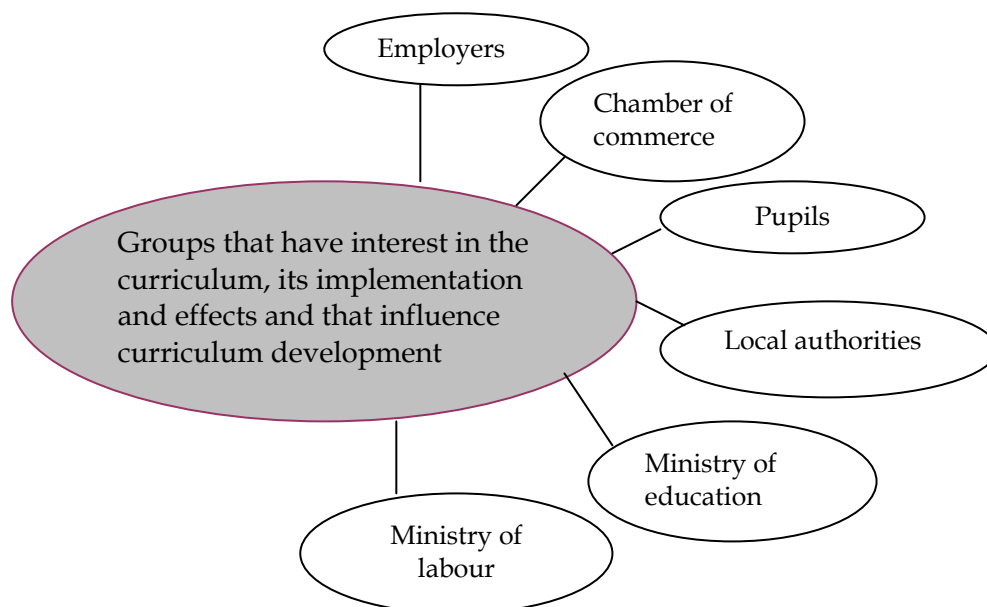
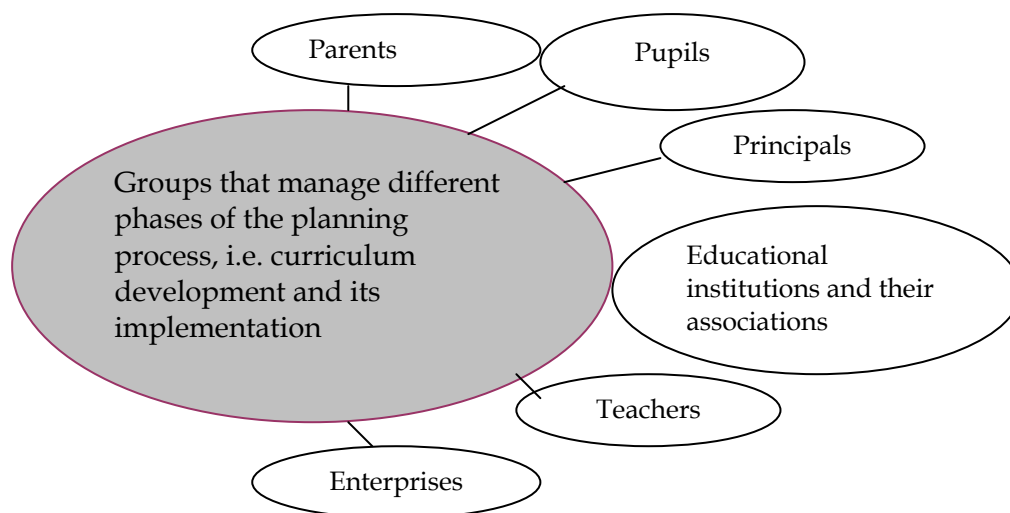


Diagram N°2. Key groups involved in vocational education and adult education curriculum planning and development

## 1.1. The purpose of the curriculum

The curriculum represents a document designed by various actors and a testimony of the school and educational institutions' planned intentions. According to this, the curriculum is intended for various beneficiaries:

### *Students and other participants in education*

When students<sup>1</sup> intend to choose future profession or to change the present one, it is necessary for them to have general information on the programme/curriculum<sup>2</sup>, qualifications and work competencies provided therein and employment possibilities thereafter. At the beginning of a school year and education and learning process, students should have information concerning the programme implementation manner at their disposal (the number of subjects and modules, school timetable, list of literature, examination dates, the type and structure of teaching activities, learning responsibilities and the like). Simultaneously, adult students have the right and the need to participate in the curriculum creation by expressing their authentic needs for knowledge and skills and ways of their acquirement and evaluation, which will take into consideration their personal life situation, maturity, prior professional experience and motivation for learning.

### *Social partners/stakeholders and concerned communities*

Enterprises (employers) and other representatives of the local economy, such as chamber of commerce, are the future "beneficiaries" of the school's "products". Therefore it is essential that they not only receive but also actively participate in the "specification" of education outcomes within particular profiles, i.e. the specification of outcomes of the school as a whole. At the same time, they should play an active role in quality control and, when it comes to the education process realisation, they should create opportunities for professional practice delivery and for engaging enterprises' experts as teachers, instructors or trainers. This means that the expected roles and responsibilities of enterprises in the education and learning process should be clearly defined in the programme/curriculum.

### *Teachers*

At the beginning of a school year – or at the beginning of the work in school, teachers should be informed of the teaching process and teaching tasks. They must have a document at their disposal that will provide them with answers to the following questions:

- Which subjects/modules should I teach?
- Which books and teaching material are available?
- What is the laboratory and workshop equipment like?
- What is my budget for material?
- What is the correlation with other subjects/modules?
- What is the level of students' knowledge particularly of mathematics, physics and foreign languages when they enrol in the vocational school?
- What do my colleagues teach and when?
- Which dates are set for meetings with colleagues, the principal and parents?

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<sup>1</sup> The term **student** used in this text stands for pupils aged between 14 and 18 and pupils/students older than 18, as well as for adult students.

<sup>2</sup> The term **educational programme** in this text denotes educational plan and programme, content and realization methods, necessary implementation infrastructure. Also, the term curriculum is kept in this text according to the text prepared by Peter Van Engelshoven.

- Which dates are set for tests and exams?
- Which are the vacation periods and dates?

While preparing classes (lessons), the teacher must choose a teaching method for that class, must configure elements of its content and prepare necessary audiovisual means, etc.

### *School principals and management*

Principals/managers in education must designate teachers, organise timetable and the whole teaching and education process in the school. They are especially interested in:

- the type of subjects/modules,
- the number of classes (lessons) and the number of students in each group,
- the type of needs occurring in each class and each subject.

They have to keep education authorities informed about the programme/curriculum, students, equipment, building, etc.

### *Local authorities*

Local authorities invest considerable resources in secondary vocational education. According to present regulations or decisions these resources are being directed towards institutions for secondary vocational education and adult education. Therefore they need to know in what way the money is to be spent. They should, particularly, possess information on the following:

- what types of programmes and education and training forms are being implemented and at what level?
- What qualifications and certificates are acquired?
- What are the needs of the local labour market and to what extent the profiles coming out of the vocational school respond to those needs?
- How many employees are there in the school?

### *The Ministry of education and the Ministry of labour and employment*

Through the Ministry of education and the Ministry of labour and employment, the Government invests resources from the national budget in education. The Ministry of education deliberates aspects of creativity, democracy and lifelong learning, looks after financial resources set aside for investment in school buildings, equipment, teachers. The Minister should translate political decisions from other sectors into new types of schools, new sectors, new curricula and new equipment, as well as to guarantee education quality. The Ministry of labour and employment encourages employment through financing capacity building, training and education focused on active job search and self-employment.

## **1.2. The concept of programme/curriculum**

In the traditional sense, the term programme corresponds to the content of education and learning process. From today's point of view, influenced by the development of different theories about curriculum, besides the content the term curriculum encompasses the "environment" in which the learning activities are performed, namely learning and teaching conditions, processes, activities and actions that lead to the accomplishment of educational and learning goals. As to the operational aspect, the programme, i.e. curriculum is a document, which represents a basis upon which the planned education and learning process is being realized. Peter van Engelshoven defines curriculum as a *planned document for the*

realization of the education process that contains the description of education tasks and means of accomplishing those tasks, as well as the ways to evaluate the results of this process.<sup>3</sup>

According to this, programme is a common term for various types of planned and working documents at different levels of their implementation:

- a) social (national),
- b) sectoral (branch),
- c) school (institutional) and
- d) subject, or modular level.

In the *Concept of secondary vocational education* the Unique programme of secondary vocational education is defined as the structural framework for the organisation and realisation of education as well as for the achievement of the intended learning outcomes. The program defines:

- goals, outcomes and content of education,
- processes and activities of programme/curriculum achievements and realisation (organisational forms, models and methods of teaching and learning), and
- ways, criteria and standards for the assessment of achievements

### 1.2.1. Types of programmes/curricula

#### *General or national programme/curriculum*

The national programme/curriculum is a plan passed by the Minister of education, mandatory for all schools pertaining to a certain level.

The national programme/curriculum defines:

- the most important principles of schools at that level;
- appropriate education level within the national education system structure;
- the most important tasks of this type of school;
- the most important organisational instructions relating to students' enrolment, subjects/modules, teachers, minimum teaching plan, exams, testing rules etc.;
- the most important conditions concerning buildings, equipment, financial resources, staff, etc.

Furthermore, the Ministry uses this document as information for the labour market and for international presentations of the national vocational education.

#### *Sectoral programme/curriculum*

The sectoral programme/curriculum can be used in situations where the state identifies economic sectors and secondary vocational education is linked to specific sectors, such as, for example, agriculture, health care, economy etc. In such a situation legal regulations define the status of this programme/curriculum.

#### **The Law on the foundations of the education system (2003)**

**The National curriculum framework** is the same for all secondary vocational schools and it represents a foundation for:

- determining curriculum framework by types of education and educational profiles in secondary vocational education;
- passing the programmes for final and graduation exams (Matura) and
- defining education quality assessment criteria.

The national curriculum framework encompasses:

- general goals, principles and outcomes of education, by type of secondary vocational education;
- education areas with goals and outcomes ;
- the scope of participation of education area in each type of secondary VET ;
- basic subjects by level, which are compulsory during VET;
- the list of compulsory and elective subjects by level;
- general knowledge standards;

<sup>3</sup> Peter van Engelshoven, Workshop on principles of curriculum development for VET, CARDS programme work material, Belgrade, 2003, page N°7.

The sectoral programme/curriculum is a planned and working document, which deals with the organization and structure of secondary vocational education and training corresponding to particular economic sectors of the state. This programme accords with the National programme/curriculum and specifies in greater detail the framework of vocational education, concerning regional labour market needs. The following elements could be cited in the sectoral programme/curriculum:

- the name of the sector;
- qualification structure within the sector;
- general rules concerning enrolment and transfer;
- sector structure;
- areas of the sector with profile outcomes;
- philosophical, pedagogical and didactical principles;
- links between the sector and vocational education and training;
- evaluation and certification system;
- quality assurance and assessment system;
- additional activities in the field of capacity building (training);
- specific health rules for employment within this sector.

The sectoral programme/curriculum is deliberated by social partners/stakeholders and is approved by the ministry of education.

**The Law on the foundations of the education system (2003)**

The specific curriculum framework for secondary vocational education is determined by types and educational profiles, and it contains:

- goals and outcomes of subjects by types and educational profiles;
- the mandatory and recommended content of the subjects, topics and modules
- the provisional number of classes for subjects, topics and modules;
- specific standards of knowledge and skills;
- the recommended types of activities in educational work
- the recommended types of modular teaching.

*The school programme/curriculum*

The School programme/curriculum is a planned and working document pertaining to an individual school or institution, and it is adopted by the school's authorities. It is clear that the school programme/curriculum as such must be aligned with the national. Nevertheless, the school programme/curriculum needs to contain certain local or regional solutions and interpretation, such as:

- the name and address of the school;
- map of schools at local level;
- school management structure and external contacts;
- enrolment regulations ( relating to a particular school in the region);
- the interface between the school and other institutions, schools;
- the school's tasks;
- the number of classes or areas (work areas) in the school and profile outcomes;

**According to provisions of the Law on the foundations of the education system the school curriculum comprises:**

- the title, type and duration of the curriculum;
- compulsory and elective subjects or topics by grade;
- the manner and procedure for the implementation of the regulated curriculum framework and the achievement of the outcomes, by grade;
- the total number of classes for each subject or topic;
- the total number of classes for each grade;
- programme content and activities for the realisation of the specific part of the curriculum;
- the title, type, content and manner of the realisation of modules.

- philosophical, pedagogical and didactical principles of the school;
- internal decision-making procedure;
- the rules and procedure for professional development of teachers;
- the school's evaluation system;
- quality assessment and assurance system;
- pedagogical monitoring and guidance system;
- the participation of students and parents in the decision-making process;
- employment contracts for employees and the definition of their duties;
- the number of classes (lessons) – per week and the duration of a single class;
- the organisation of education and training;
- planned activities related to teachers and the teaching plan;
- school vacations and special leave of absence rules;
- additional school activities;
- standards for the preparation of teachers for classes;
- the school rules concerning international contacts;
- enrolment in further education and training institutions.

The programme/curriculum of this kind represents a certain «scenario» intended for teachers that will provide them with the opportunity to check situation in education relating to particular subjects/modules or areas in school, or to analyse situation in other subjects. The national programme/curriculum offers the outline of education and the school curriculum – activities at the school level. The school curriculum is adopted by the school. The school may use this document for local and regional relations with the public.

**The school curriculum** is defined by each secondary vocational school according to:

- the national curriculum framework and
- the specific curriculum framework.

The school curriculum ensures the realisation of general (national) and specific curriculum framework and the needs of pupils and parents, the school and the local self-government unit.

### *The programme/curriculum for educational profiles*

This programme/curriculum is a planned and working document for a particular area in an individual school. It may comprise:

- the name and address of the area and the location in the school;
- the name of the manager of that area or that part of the organisation;
- entry profiles of students;
- special criteria for enrolment into this area, which are different in comparison with the school's enrolment criteria;
- the outcomes of profiles, on completion of which a certificate is received, and their employment in the labour market;
- education tasks in that area;
- the list of general education and vocational subjects/modules with the annual number of classes (lessons), and with the definition of knowledge and skills that students should acquire;
- school activities in companies or visits or excursions;
- the list of books and teaching aids for students;
- examination conditions and rules;
- collaboration with other areas in schools;
- planned meetings between teachers and professional support staff and parents;

- existing international contacts;
- teaching and training organisation with compulsory and elective subjects and modules.

*In view of the fact that the majority of countries still strive to achieve the vocational qualification uniformity, teachers and experts are developing the profile programme/curriculum at national level as well, together with the profile or vocation outcome.*

The differentiations are possible within the profile itself, and they are included in the programme/curriculum as outcomes.

The programme/curriculum for the educational profile displays more details concerning education and training organisation, which are important for the individual pupil. At this level the pupil may be informed of this document.

#### *The subject/modular programme/curriculum*

The subject or modular programme/curriculum represents a part of the programme/curriculum for the educational profile. In some cases the subject is divided into modules, and sometimes subjects do not exist but only modules or vice versa. This is a planned and working document in accord with all other subject plans within the profile programme/curriculum, which offers concrete support for the preparation, realisation and evaluation of the education process. The subject/modular programme/curriculum comprises:

- anticipated initial situations in relation to the subject and other corresponding general and vocational subjects/modules;
- clearly-worded subject/modular tasks in terms of terminology;
- the selection and segments of the subject/modular content;
- adequate subject references;
- didactical procedures for different tasks;
- expected learning activities achieved by students;
- special activities including excursions, visits to enterprises and the like;
- planned teaching activities of teachers and trainers;
- used teaching aids, such as laboratory instruments, measuring tools, audiovisual media, modernisation means;
- special rules for protection;
- the appraisal method;
- questions for tests for the diagnostics, evaluation and/or selection of usage;
- the acknowledgement of these subjects/modules as the entrance level for other subjects/modules;
- the names of persons involved in the delivery of this subject/module, their qualification and responsibilities.

The subject programme/curriculum is mostly developed together with the profile programme/curriculum and it represents its integral part.

#### *Lesson plan*

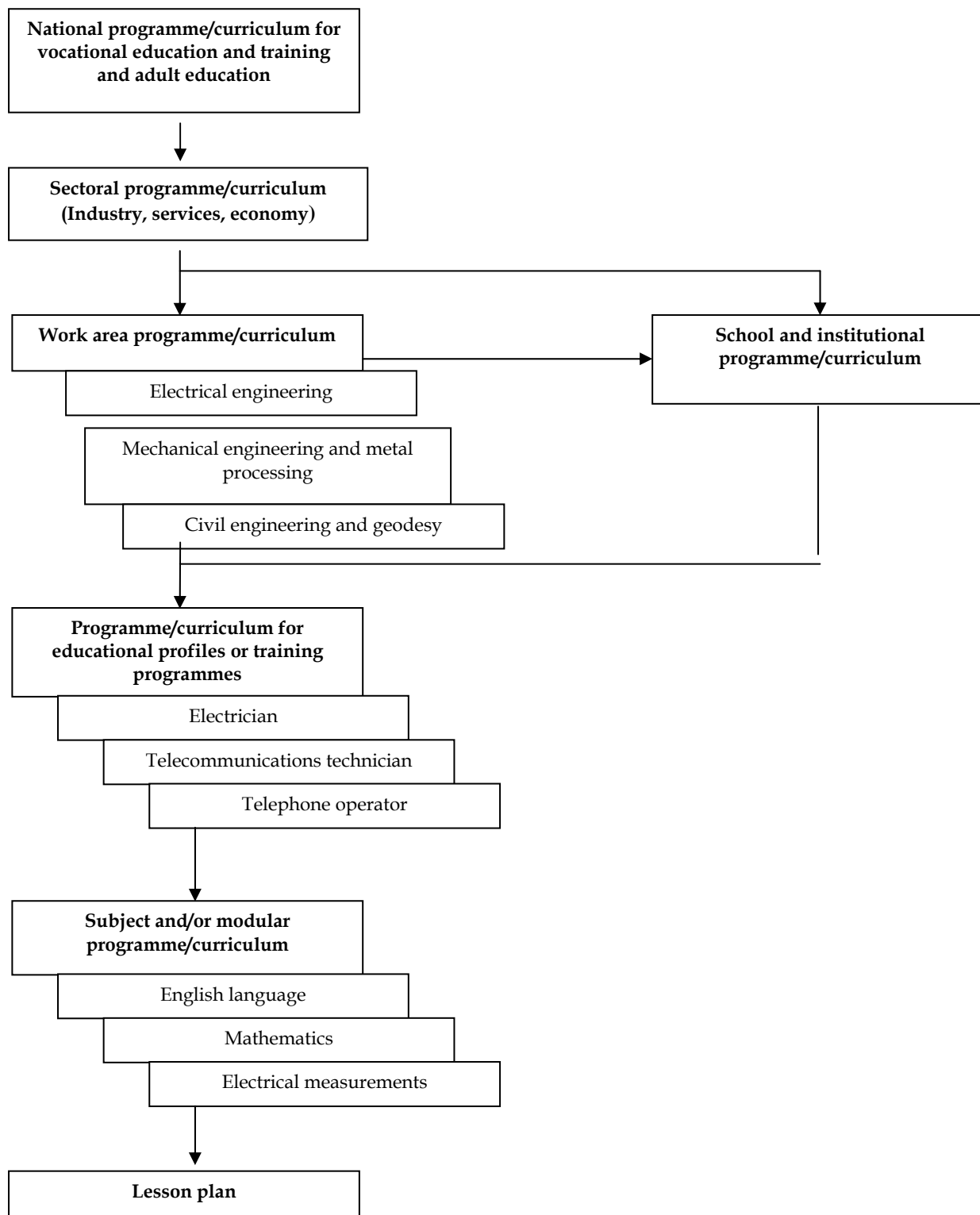
The lesson (class) plan within a certain subject or module is prepared by the corresponding teacher. It is a planned document, which describes in detail the planning of the teaching process. It encompasses:

- the definition of its place within the subject or module;
- concrete lesson tasks;
- the definition of the educational method;
- the link with previous lessons;
- the description of students' educational activities;
- the material necessary for the lesson;

- the evaluation questions;
- topics for the following lesson;
- homework and other requests assigned to students;
- the evaluation remarks given at the end of the lesson.

These lesson descriptions could be collected in a special form.

Diagram N°3. Possible types of programmes at different levels<sup>4</sup>



<sup>4</sup> Peter van Engelshoven, Workshop on principles of curriculum development for VET, CARDS programme work material, Belgrade, 2003.

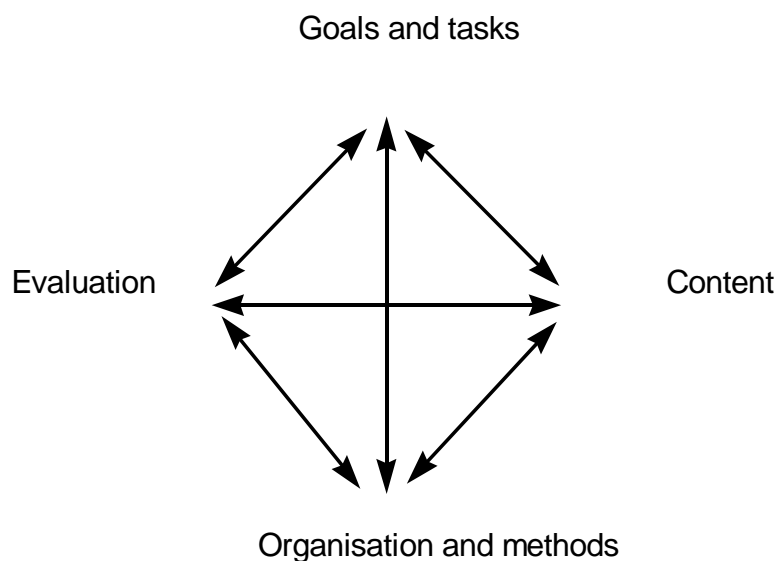
### 1.3. Programme/curriculum structure

Classical deliberations on programme/curriculum planning and development insist on the search for answers to four key questions:

- What goals should the school attain?
- Through what content could these goals be achieved?
- In what way should the content be shaped? and
- How can it be established whether the learning goals had been achieved? <sup>5</sup>

This suggests that the education programme planning and development be performed through systematic approach whose minimum structure comprehends the definition of: 1) goals and tasks, 2) content, 3) organisation and methods and 4) evaluation manner.

#### General model of education and teaching process



The optimal variant of the systematic approach to curriculum planning implies detailed answers to the following questions:

- *Why* is something being learned, with what intention (the goal and tasks of learning – education / teaching process);
- *What* is the object of learning (content - curriculum, subject matter, theoretical and practical knowledge, skills and competencies that are to be adopted);
- *What* are the planned (anticipated) outcomes of learning (what knowledge, skills, and attitudes will the students possess on completion of the programme, i.e. education and teaching process);

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<sup>5</sup> Tyler, R.W., (1949) Basic Principles of Curriculum Development and Instruction, University of Chicago Press, Chicago ILL.

- *How*, in what way will the education and teaching process be delivered (organisational forms, strategies and methods);
- *Which* aids do teachers and students use during the teaching process and education (media - means);
- *Who learns*, i.e. whom do we teach, (anthropological, psychological and social peculiarities and characteristics of those who learn);
- *Where and when* is the learning, i.e. education and teaching process performed;

With the help of these questions the following is achieved:

- the identification and precise definition of all elements (the structure) and phases (the process) of the organisation and realisation of education and teaching,
- the creation of interdependent and compatible relations between the above mentioned elements, which enables the programme to operate as a structured and functional whole.

During the process, the programme elements (the goal, tasks, content, outcomes, forms, methods, aids and the like) are rendered operational and divided into sub-elements suitable for temporal and functional combining and linking and thus creating an optimal sequence. This partition in sub-elements results in the transparency of the entire planning and programming process and the establishment of the sequence of actions and steps within the organisation and realisation of education and teaching, their temporal and organisational combining and synthesising into a unique process whose basic result is a detailed and functional programme of education and teaching.

## II. EDUCATION PROGRAMME DEVELOPMENT

The programme development in vocational education and adult education is a process of identifying answers to key questions related to the organisation and realisation of the education and teaching process. The process of this kind results in the creation of different standards, which represent the basis for programme implementation and development, and its main support.

Which skills, knowledge and work competencies are necessary for working in an occupation or for performing a job	What is the way of acquiring the necessary knowledge and skills?	What are the conditions under which the education and learning process is being performed?	What is the way to check what has been learnt and to what extent?
Occupational standard	Educational standard	Work normative and standards for schools and other educational institutions and teachers	Achievement standard

Therefore, the programme development, the identification and definition of basic structural elements of the programme in vocational education and adult education is performed through four parallel and interdependent processes:

- ◆ *the specification of work* (occupation, job or individual work functions) which relates to work conditions and content, i.e. work competencies that are necessary for performing certain jobs and tasks;
- ◆ *the specification of learning* – the identification of knowledge, skills and competencies necessary for working in an occupation or for performing a job, i.e. precise definition of goals, outcomes, content and ways to successfully acquire previously identified knowledge, skills and work competencies;
- ◆ *the specification of conditions* and norms which relates to the definition of conditions (material, technical, human) under which the education and learning process is being realised;
- ◆ *the specification of evaluation and assessment* which deals with the evaluation and assessment of programme relevance and success, the evaluation of achievements concerning programme adoption, and identification of ways and criteria to test what has been learnt.

### 2.1. Specification of work – occupation, job or work function

The education programme development starts with gaining full insight into the world of work, i.e. occupation or concrete job, which is realised through the analysis of needs whose general outcomes are:

- occupational profile (job, work function) and
- occupational standard (job, work function).

#### 2.1.1 Needs analysis

The analysis of needs is the first and basic step of the programme development process. Its goals are:

- identifying the relation between the needs of the society and economy for specific profiles, i.e. occupations and the supply of those profiles and occupations on the labour market, and
- identifying the difference (discrepancy) between what students or prospective students know and can do and what they are required to know and do.

According to this, in secondary vocational education and adult education there are two types and two levels of the analysis of needs for knowledge and skills, i.e. work competencies:

- the analysis of needs for profiles i.e. occupations,
- the analysis of needs for knowledge and skills, i.e. work competencies within individual profiles, i.e. occupations or work functions.

These two types of analyses are mainly linked (successive) but they can be performed separately and independently one from another, as well.

#### *The analysis of needs for profiles i.e. occupations*

The analysis of needs for profiles/occupations is a procedure, which is performed at the macro level (national or regional), sectoral level as well as individual organisation level. The analysis enables the identification of types of profiles/occupations, which are needed at the macro level or at the regional level, the level of an economic sector or individual organisation. This type of needs analysis is not only an empirical procedure of identifying the lack of certain profiles, i.e. occupations, but it is also a complex rational and theoretical research which is characterised by scientific and professional, socio-political, axiological, ethical, historical and comparative, and socio-psychological dimensions (data on: basic social values and orientations, the level of technological development and changes, socio-economic factors such as state finances and subventions, psychological factors such as ethos and motivation and social ethos, perceived and real requests for particular profiles, skills and knowledge, etc.).

In the methodological and operative sense, this process is a combination of different research approaches and procedures: from theoretical contemplation and value judgement (including analysis and synthesis), expert evaluation, and expressions of desires and interests, to complex empirical research activities and procedures (observation, registering, description, measuring, classifying). In the operative sense this process is conducted through:

- registering general social (regional) situation (demographic situation and trends, the level of economic development and productivity, the level and pace of technological changes, the situation on the labour market etc.);
- developing a short-term or mid-term projection of needs for profiles and occupations at global (regional) level;
- registering the current state (the number and structure of profiles/occupations) and determining the difference between the projection and the real state.

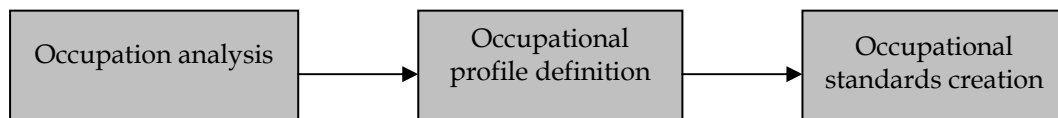
#### *The analysis of needs for knowledge and skills*

Having gained precise insight into the structure and number of profiles/occupations at the macro level it is necessary to gain insight into the structure of knowledge and skills by individual profile/occupation.

In vocational education and adult education, the needs for knowledge and skills are:

- the desirable, required standardised state, established by a system, group or individual in the form of a request, norm or knowledge or skills standard;
- the differences between necessary, desirable, required or standardised knowledge and skills, on one hand, and knowledge and skills presently possessed by individuals on the other.

The determination of necessary knowledge and skills within individual profiles/occupations is performed within the framework of the following procedure:



Occupation analysis starts with the qualitative analysis of work within a particular occupation, i.e. conditions in which it is performed, basic value orientation and principles of work performance, technical means that are used, general functions, activities, duties, procedures and operations that are performed. The analysis includes not only the existing state but also the (immediate) predictable (expected) state of the work and occupation content.

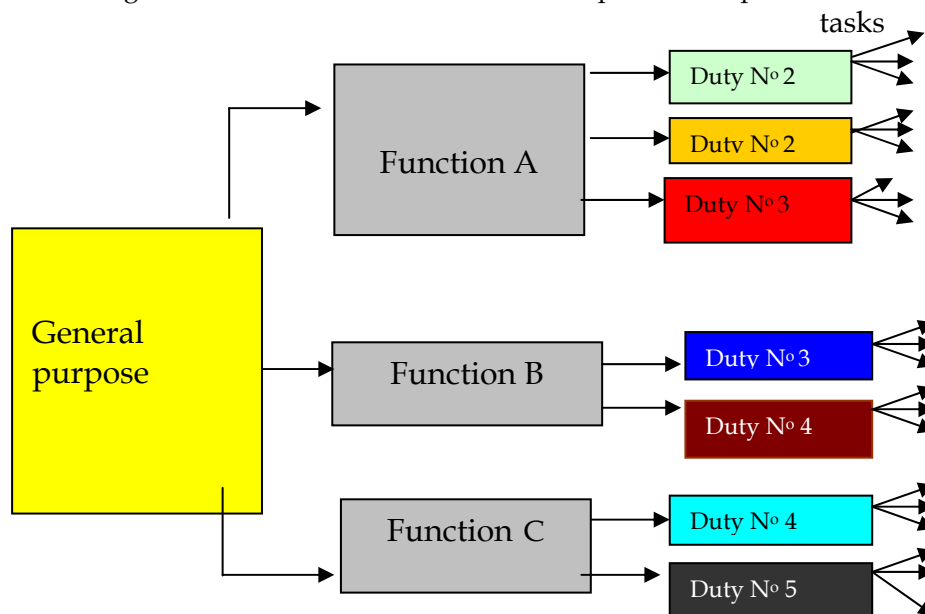
The result of the work analysis is a comprehensive description of performed work activities or the *occupational profile*.

The integral part of this description is data on machines, instruments, tools and materials necessary for the performance of work within the framework of that particular occupation. The basic method of occupation i.e. work analysis is the DACUM<sup>6</sup> analysis or the method of functional mapping, and the production of the functional map for a concrete occupation. These analyses encompass different techniques and methods of data collecting: causal analysis, systematic observation, interviewing, poll conducting, panel discussions, role playing, simulation, brainstorming, focus groups etc.

**Occupational profile** is a precise description of general functions, duties, activities, and work tasks within the framework of a particular occupation, work function or job.

<sup>6</sup> Acronym from Developing A CurriculUM.

Diagram N°4. A model of the functional map of an occupation



The occupational standard is produced on the basis of the occupational profile. For each occupational standard there must be a correspondent theoretical/rational explanation (the existence of the occupation as a specific entity different from all the others must be justified) and empirical foundation (the demand on the labour market for that particular occupation).

In some cases it is possible and methodologically legitimate to integrate the description of work activities and the description of knowledge and skills necessary for performing work activities and name them occupational standard, i.e. vocational standard<sup>7</sup>.

**The occupational standard** is a precise description of knowledge, skills, attitudes and work competencies necessary for working in a particular occupation, i.e. for performing a job.

„Standards are (generalized) descriptions of work activities, linked with the outline of the appropriate (relevant) knowledge, skills, abilities (competence)“ (Lauer Ernest)

### *The analysis of needs for knowledge and skills in adult education*

<sup>7</sup> Vocational standard

Lauer\_Ernest, U., and others (1999) Development standards in Vocational Education and Training – Specification, Experience, Examples, European Training Foundation, Luxembourg, pp. 9. (Original citation: „Standards are (generalized) descriptions of work activities, linked with the outline of the appropriate (relevant) knowledge, skills, abilities (competence)“.

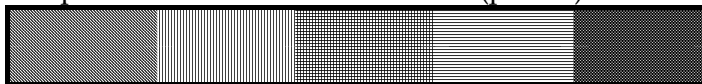
Socio-economic development leads toward the establishment of new work areas and new jobs in different areas and occupations. Often, the employees have to undergo training in order to be able to apply new technologies and processes, and the unemployed have to pre-qualify and acquire additional knowledge so as to find employment.

The knowledge and skill needs analysis of the employees is performed following the model of identification of the difference between what is and what should be. The model is realised through four phases, as suggested by Nikola Pastuović (1978): 1. *work analysis*, 2. *work profiles definition, i.e. the determination of knowledge and skills necessary for the performance of work*, 3. *examination of knowledge and skills*, and 4. *comparison of existing and required knowledge*. Graphical representation of this model is given bellow:

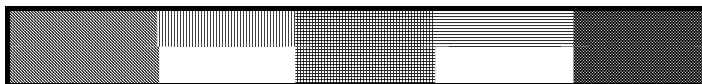
1. Work analysis



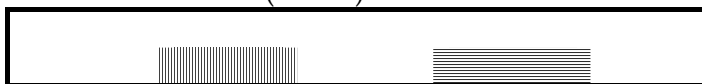
2. Requirements of work or functions (profile)



3. Knowledge and skills possessed



4. Educational needs (deficit)



The determination of needs for knowledge and skills starts with a qualitative analysis of functions and activities performed by an individual during the working process: tasks that the activity is comprised of, procedures and technical means used in the process, and the conditions in which the activity is performed. The analysis must include the projection of work, i.e. the image of its ideal performance. The result of the analysis is a comprehensive description of the work activity that is being performed. Through the work analysis, the second phase is approached - the determination of educational needs i.e. work profile definition. The profile definition process encompasses the identification of knowledge, skills and capacities necessary for the performance of work that was the object of the analysis. In the third phase, the theoretical and practical knowledge possessed by the employees is examined through objective standardised procedures, such as objective tasks series.

The comparison of knowledge and skills identified during the work profile definition phase, and the knowledge and skills already possessed by the employees, results in the distinction of discrepancy between them, which represents educational needs in a particular field of work.

The knowledge and skill needs analysis of the unemployed, or the analysis of needs for knowledge and skills needed on the labour market is a more complex process. It encompasses the identification of specific needs of the organisation, community or labour market, i.e. the identification of new programmes and programme topics. Different types of

needs are “operational” on the market and they need to be “caught” within an adequate methodological procedure:

- *normative needs* – the individual or the group have an “inadmissible” deficit – they are placed below the norm or expectation in relation to some defined group or established achievement standard (the ones whose test result is below the national average);
- *experienced needs* – the individual or the group “feel” the need for certain knowledge and skills (managers who feel that the “safety at work” course could prevent future problems; teachers who “feel” that a certain programme could be competitive on the market);
- *expressed needs* – the expressed interest is much higher than the present possibilities (250 people applied for a programme/course limited to 100 people) ;
- *anticipated needs* – knowledge and skills currently not needed but expected to be needed in the immediate future (workers who will use new tools and instruments once the work process is modernised).

The identification of knowledge and skills needed on the labour market, i.e. new programmes, comprehends a systematic analysis of the organisation, the local community or the sector, taking into account socio-economic inputs at the macro level. Various methods and techniques are used in the analysis and identification of this group of needs. Similar to the analysis of needs for profiles, i.e. occupations, the “knowledge and skills market” research is not exclusively empirical undertaking and procedure. The first step is rational thinking and value judgement (someone has to decide that the present capacity for the performance of work is inadequate, someone has to define and describe desirable knowledge and capacities). Values provide the basis for judging what is needed. In this manner, the identification process is the process of their creation and development. In view of the fact that the needs are the discrepancy between what is and what is supposed to be, the definition of the desirable state is in fact the act of creation and development of needs.

The knowledge and skill needs analysis is to provide information on people who need those skills and knowledge, on jobs they do or will perform and on the very products or processes that are the result of their work. There are three basic ways: observation, interviewing and documentation analysis. The examination of the necessary knowledge and skills is a combination of several types of information and ways of information collecting.

Information type	Information source		
	Observation	Interviewing	Documentation analysis
People	Observation of work performed in existing conditions	Interviewing the target group	The deliberation of employers’ data or personal files
Tasks	Observation of work performed by the target group or experts	Interviewing experts	The review of job descriptions, strategic documents or reports
Content	Observation of experts or product/ process creators	The interview with marketing experts or managers	The review of product scheme, its specification and marketing documents

# III. TEACHING AND LEARNING PROCESS / the specification of learning

## 3.1. Goals formulation

The goals of education are the intentions and orientations of education organisers and teachers in the field of education and learning, and they result from the analysis of needs, i.e. occupational standards. They are the starting basis for programme planning and development.

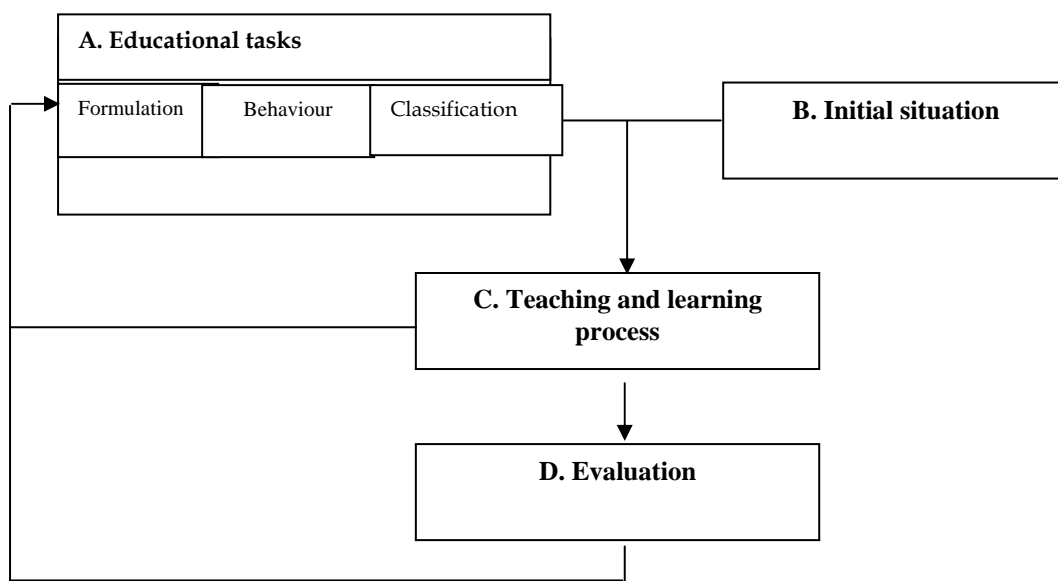
General education goals and general vocational education goals should be taken into account during the formulation of concrete programme goals.

The general goal of education, as defined in the *national curriculum framework* is enabling pupils to:

- actively and responsibly participate in economical, social and cultural life and contribute to democratic, economical and cultural development of the society;
- successfully satisfy their own needs and interests, develop their own personality and potentials and in doing so respect other persons, their identity, needs and interests.

The education tasks are not just the initial element of a didactical process, but they are also evaluation standards for the process itself. They play the key role in the selection of the didactical method. Therefore education tasks should be carefully classified and formulated in the programme/curriculum.

Diagram N°5. Tasks in a didactical model



### *Behaviour*

Educational activities can influence the behaviour of individuals. In this sense, three types of behaviour could be recognized, which results in three types of tasks:

- cognitive tasks;
- psychomotor tasks;
- affective tasks.

While the training process mostly operates with cognitive and psychomotor tasks, the education process has to balance all three tasks in order that the harmonious results can be achieved. Since vocational education encompasses education and training the programme/curriculum must accomplish harmony between all three tasks.

## **3.2. Education tasks formulation**

Education tasks describe desired prospective behaviour of students after the education process. This behaviour always relates to a particular object and content of the task. Sometimes this behaviour needs some preconditions, which is included into the task itself. Finally, this behaviour is to be compared against a specific standard, which is also defined.

Considering the consequences education tasks should always comprise:

- the concept which describes students' behaviour;
- the content which describes themes of this behaviour.

At the concrete level tasks should also contain:

- additional preconditions;
- comparable standards.

The following examples could be used as an illustration of the above mentioned:

Cognitive tasks:

- students are capable of analysing complex mathematical problems.

Psychomotor tasks:

- the pupil is capable of changing the car tyre in 6 minutes by using the adequate key.

Affective tasks:

- students show their readiness to improve hygienic conditions in the realisation of production technology .

### *Tasks application*

Education tasks can be formulated globally or in more detail depending on the application purpose of the programme/curriculum. In general, there are 2 application levels:

- *General or national tasks* are generally formulated tasks for particular levels of education and training, for particular types of schools or particular types of training. Examples are tasks of sectors, general secondary schools or reformed vocational education and training.
- *Concrete tasks* are very clearly formulated tasks at the school level, profile level or particular subject/module level or they are particular practical tasks in the school environment (learning environment) (school, economy or learning activities).

Since these areas depend one on another very much, consequently, the tasks themselves are connected. One general task can be described in detail in subsequent 5 to 10

concrete tasks. Once formulated, the concrete task must always take into consideration its belonging to the general task and vice versa.

### General tasks

General tasks are those which education as a whole has to accomplish. These tasks describe the values and needs of the society and individuals and they denote wholeness of education, hence, the government or the ministry defines them.

Examples:

- To provide the new generations with knowledge at all levels so that they become efficient and successful in their personal, social and economical life.
- To prepare all individuals for future life by developing their interests, talents and capacities.
- To prepare students for a free market oriented society.
- Students will pass vocational preparation in order to acquire master level.

### Concrete tasks

Concrete tasks are descriptions of desired educational results on completion of particular educational phases or on completion of education within a particular programme. Concrete tasks are formulated by using controlled terms of knowledge, skill or capacity levels that students display at the end of a lesson, module, programme/curriculum or module series.

Concrete tasks have the following advantages:

- the clear indication of students' knowledge and skills;
- support to the development of subject material and learning activity;
- opportunity to measure educational results (process or product);
- conveying information on initial situations to the learning activities that follow.

For example:

**The example for agriculture:** On completion of learning period students will be capable of conducting and running dairy farm independently.

**The example for the secondary technical school:** On completion of education students should be able to analyse and correct mistakes in technical systems.

**The example for mechanical engineering:** On completion of training period students are competent to discover a problem, analyse, correct and explain a mistake in the hydraulic system of the car.

-

### *Pupil's behaviour*

In this classification **students' behaviour** can be sorted in 4 groups<sup>8</sup>:

1. Knowledge (K)
2. Comprehension (C)
3. Application (A)
4. Integration (I).

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<sup>8</sup> Examples of possible terms that can be used in defining goals and tasks are given in Appendix 1

### 3.3. Relation between goals and outcomes

Goals of education and learning should not be identified with outcomes. Outcomes are accomplished results, whereas goals of education are determinations, intentions and aspirations that are to be accomplished in education and learning process. Goals and outcomes differ in their basic functions and formulation manner. Goals enable programme planning and development, and outcomes - monitoring and evaluation of the education process. Goals are formulated in the form of verbal nouns, and outcomes in the form of active verbs, i.e. actions that students will be able to perform on completion of the programme.

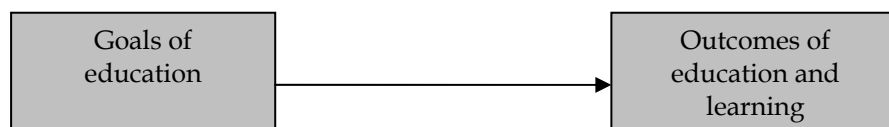
In the *Concept of secondary vocational education* the general goal of secondary vocational education is to provide young people and adults with the opportunity to acquire knowledge, skills and capacities (work competencies), and with the possibility of employment, further education and learning. Namely, it should provide:

- acquiring occupation and qualifications, i.e. relevant work competencies, knowledge and skills necessary for working in a particular field of work;
- acquiring initial and continuous vocational education and development;
- providing necessary preconditions for obtaining a job and economic independence;
- developing capacities, talents and potentials and personal self-fulfilment

Diagram 6. The relation between goals and outcomes is given in the following table

Goals	Outcomes
What the teacher will do - is emphasised	What the pupil will do - is emphasised
Description of learning intention	Description of learning results
The emphasis is on the opportunities for learning	The emphasis is on how to use acquired knowledge
Includes the assessment of quantity that can be learned in a given period	Demands a flexible determination of the time according to the defined quantity
Are formulated in the form of verbal nouns (developing, training etc.)	Are formulated in the form of active verbs (drills, bends etc.)

Goals of education are, basically, always directed towards the accomplishment of outcomes of education and learning.



Outcomes have the central place in the structuring and development of educational programme, i.e. teaching and learning. Outcomes are more precisely determined in the framework of effectiveness, efficiency and desirability levels. The level of effectiveness shows whether we are doing the right thing in the teaching process, namely whether the teaching process is organised well and whether it really accomplishes anticipated goals. This is not the question of the nature of goals but whether they are accomplished or not. The level of efficiency is closely determined through the time and money necessary for the organisation and realisation of teaching and learning, which leads towards anticipated

outcomes, whereas the level of desirability discusses the pupil's interest in learning and ultimate learning results.

The education process always results in certain outcomes but their nature is often very vague and unclear. In vocational education and adult education as well, the programmes with random, inadequate and imprecisely defined outcomes are not scarce, which creates, in consequence, the practice of "production" of people with formally recognised qualifications who lack in some basic competencies that they are expected to possess. There is a significant difference between the simple "production" of outcomes and outcome-oriented education. In outcome-oriented education the outcomes are defined prior to the education process and are known to teachers and students, who receive necessary support during the learning process in the form of an adequate and fully conceived approach to the accomplishment of these outcomes. This means that outcomes determine and define education and learning process and that the school and the institution whose programmes are based on outcomes should:

- clearly formulate outcomes of a particular programme, explain them and make them completely public and known to all interested parties;
- deliberate ways of organising the teaching and learning process through which the outcomes are reached, i.e. on the basis of which students can be successful in reaching the outcomes.

Outcome-oriented education is a philosophy and an approach to education and education planning and programming, in which all decisions about the programme are derived from the outcomes that are to be achieved at the end of the education and teaching, i.e. learning process. This means that the final "product" defines the whole process. The outcomes define the programme, its structure, organisation, methods, techniques and realisation strategies and evaluation criteria and manner.

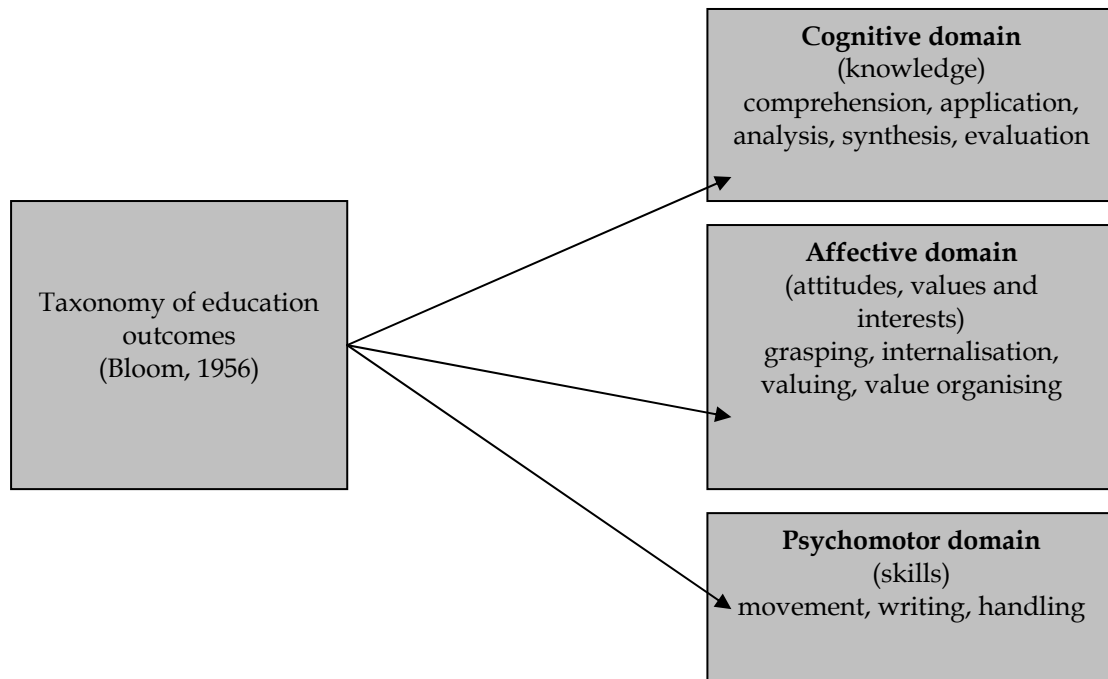
Outcomes induce teachers and students to share the responsibility for success in learning, providing both groups with a clear image of what they can expect on completion of a particular programme i.e. education and learning process.

Outcome-oriented education implies organising education and teaching process and directing it towards what the ones who learn will know and will be able to do at the end of the learning process. This means that the programme structuring and developing process starts with a clear image of what will happen at the end of the learning process. Accordingly, the fundamental approach to programme creation is "backwards" programming.

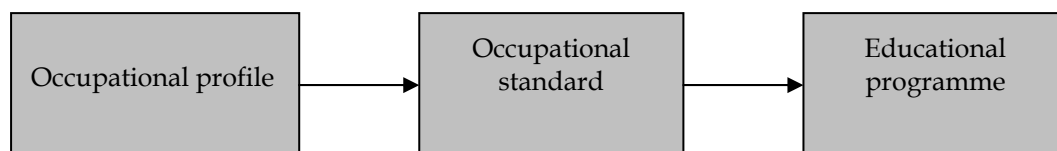
In backwards programming, i.e. programming «from exit downwards», the whole education is being conducted on the basis of the following sequence:

- outcomes defining,
- evaluation criteria and means defining,
- organisation defining (forms, methods, means, strategies of education, teaching and learning),
- achievements determining.

Outcomes completely determine the way of planning, programming and their structure. They represent clearly and unequivocally defined work competencies, knowledge, skills, potentials, attitudes and values, which are achieved after a particular programme, i.e. education and learning process. With the use of Bloom's (Bloom, 1956) taxonomy as the starting point, outcomes are classified into cognitive, affective and psychomotor, and formulated at different levels - knowledge, attitudes and skill level.



Outcomes are derived from the distinctiveness of physical, psychological and socio-cultural development and requirements of environment, roles, and responsibilities. With age and education level increase, the requests of the socio-cultural environment become more dominant in the field of outcomes definition. In vocational education and training outcomes/goals are derived from professional roles and responsibilities of job descriptions - occupational standards. The occupational standard is used as a foundation for the development of educational, teaching and learning programmes, and it is usually made within the framework of the occupation analysis, which results in the occupational profile.



### 3.4. The structuring of education content

The identified needs for knowledge and skills, i.e. occupational/job/function standards, form the fulcrum for education content selection in secondary vocational education and adult education. The selection and the structure of content directly stem from defined outcomes and goals.

Two types of programme, i.e. content structuring, are characteristic for the vocational education and adult education practice:

- subject/disciplinary programmes and
- complex problem programmes.

The first type deals with the division of education (teaching process) content into subjects that mostly correspond to particular scientific disciplines and fields. The second type deals with and combines content coming from different disciplines and fields, by the adoption of which the individual gains competence to solve a particular problem. Bearing in mind that planning and programming of vocational education and adult education is based on the principle of flexibility, which implies the programme adjustments to ongoing and swift changes of the environment and to students' needs and potentials, the complex problem approach, namely the modularisation as its specific variant and basic way of content structuring, becomes more dominant in education content structuring and planning.

### *The content and forms of learning*

By the means of programming, previously identified needs for knowledge and skills are provided with an optimal didactical-methodical form and structure so that the anticipated education and learning outcomes can be achieved. In vocational education and adult education, the education and learning content is presented in the form of modules, namely modular units. Modules are, by their learning content, interdisciplinary but not divided by subjects. They encompass knowledge complexes emanating from various fields, which are necessary for job performing or working in an occupation

### Modules

Teaching and learning processes are organised and realised through modules, i.e. specific, integral learning segments or packages, which lead towards professional competence and in which the disciplinary and subject boundaries concerning content presentation and adoption, are very fluid or even banished. Modules are separate learning segments or packages, which lead towards the achievement of defined learning outcomes. They are relatively independent learning units and like such they can be organised and adopted individually or in the framework of broader programme or organisational units. By their structure, modules ensure the adoption of various types of knowledge and competence, the development of respective set of skills and the interdisciplinary and cross-subject linking of different contents.

The reasons for modularisation in vocational education and adult education are numerous and diverse. First and foremost, modularisation enables:

- higher flexibility in education planning and organising,
- higher economic efficiency of education,
- better adjustment to the needs of the labour market and concrete working environments and jobs,
- better vertical and horizontal mobility in education,
- more adequate way to overcome the hiatus between school (academic) qualifications and work competencies and knowledge acquired in practice,
- better adjustment to individual needs and learning capabilities,
- the real choice of individual pace and way of learning and acquiring qualifications and work competencies,
- continuous education and the possibility of discontinuous qualifications and work competencies acquiring.

The occupation, i.e. qualification concept is a reference framework for modularisation, whereas a precise description of an occupation is a basis for the creation of a module. In education system, occupations are represented as module clusters - set of functional, organised and linked packages, i.e. learning units. Some modules can be part of

different occupational clusters, which is the way to enable horizontal and vertical mobility within the education system.

In vocational education there are two main modular concepts and two methodologies for module creation:

- general (comprehensive) modularisation – leading to the integral qualifications,
- fragmental modularisation - leading to partial qualifications and training for individual jobs and working functions.

*General modularisation* leads to the integral qualifications and intermediate specialist training. In this type of modularisation modules are created by dividing occupations into less complex but differentiated parts of roles, functions or working competencies within a certain occupation, which could be acquired, assessed but not recognised (certificated) individually. Modules are verified only as part of a wider set that leads towards comprehensive professional qualification, i.e. gaining capability to work in an occupation. Modules pertaining to this type are being implemented in the school system and are mainly intended for young people, although the opportunity to pass individual modules is not denied to adults in regular schools nor is it denied to institutions for adult education to provide them.

General modules are used as the foundation for the development of programmes i.e. modules intended for adults. In the process of adapting general modules (i.e. the integral qualifications) to the needs of adults, previously acquired education, knowledge and experience should be taken into account together with particularities of adult education and learning.

Adaptation is being done in the following areas:

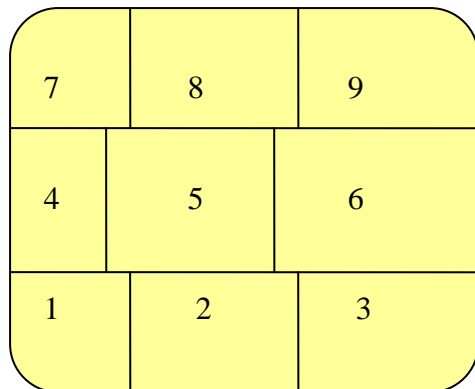
- organisation and education,
- the time and duration of education,
- goals and outcomes of education,
- evaluation and assessment manner.

*Fragmental modularisation* leads towards the partial qualifications, i.e. gaining capability to perform a particular working function or task, in a particular place of work. Fragmental modularisation means that modules are created by:

- a) dividing occupations into less complex but differentiated parts, or
- b) identifying the needs of the labour market or particular organisations for specific competencies and training for particular jobs, specific functions and roles. This type of module can be acquired independently (separately) and recognised (certificated) individually outside the general qualifications system. Fragmental modules are being implemented in the schools and institutions for adult education and they represent an expression of efforts to satisfy the needs of the labour market and continuous technical and technological innovation and restructuring of enterprises.

Laur-Ernest and other theoreticians speak about the structured and fragmental model and development of modules:

Structured model

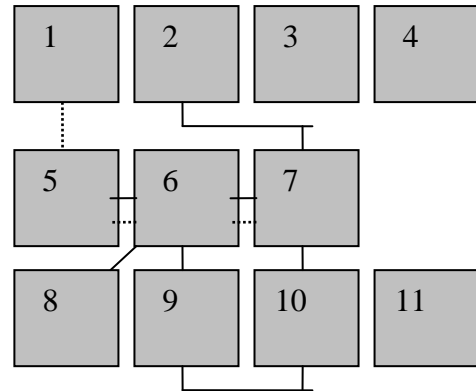


Final assessment

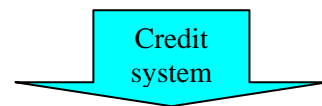


Modules as integral elements of a defined whole - occupation

Fragmental (flexible) model



Assessment/exams for each module



Scope of work of specific modules as independent units with possible combinations

Source: Laur-Ernest and others Development of Standard in Vocational Education and Training - Specification, Experience, Examples, Volume, 2, European Training Foundation, Luxembourg, 1999, pg.26.

Modules may be independent or part of broader programme i.e. organisational units. They are designed on the bases of akin and complementary principles, diverse educational demands and defined thematic tasks.

Modules can encompass several different disciplines, but each discipline has its own clearly defined goals and tasks. Boundaries are not strictly defined but they enable the process of pervading and correlating, and the creation of a unique modular educational package.

*The definition of the module in the Concept of secondary vocational education:*  
**MODULE** is a set of functionally linked knowledge, skills and capacities (work competence) necessary for the performance of a particular job/task.

- The types of modules in the Concept:**
- **Compulsory modules**
    - make the minimum standard and encompass the modules that offer the first level of work competencies or abilities for performing jobs within a profile or occupation.
  - **Elective modules:**
    - are the modules chosen by the pupils according to their personal wishes, abilities or plans, and they enable moulding the personal profile of each individual.

### *Educational methods*

A good teacher will apply the optimal didactic method in order to achieve the best result in the education process. This includes the interaction between the teacher and the one who is being educated concerning the accomplishment of tasks that are defined in advance.

At the scientific level there are around 250 different types of didactic methods.

Some of them are the following:

- frontal teaching,
- in-class teaching process,
- individual tutorial system (for example - programmed teaching process),
- laboratory work,
- demonstrations,
- active students' demonstrations,
- discussion,
- guided individual research method,
- simulation,
- team teaching,
- role distribution,
- forum discussions,
- thematic approach,
- case study,
- round tables,
- educational projects,
- excursions and visiting exhibitions,
- professional practice in enterprises.

The implementation of educational methods is strictly determined by the task level and infrastructural conditions. The underlying assumption is that teachers have mastered these methods and are skilful enough for their realisation. Nevertheless, the training that will enable them to use these methods could be offered within their **professional development (in-service teacher training)**.

Applicability of some educational methods for different types of tasks could be illustrated in the following table:

<b>Relation between educational methods and types of tasks</b>													
	Educational method	Education tasks											
		Cognitive level				Psychomotor level				Affective level			
		K	C	A	I	K	C	A	I	K	C	A	I
01	Frontal teaching	+				-				+			
02	Individual reading of books	++	+			-				++	+		
03	To show how it is done	-				++	+			~			
04	Theory and demonstration		+			+				+	~		
05	Watching TV and video	+				~				++	+		
06	Students' demo		+			+					+		
07	Class discussion			++	+			+	*		+	++	
08	Role distribution			+				+	*			+	
09	Structured explanation		+				+				+		

10	Guided self-research		++	+				+			+		
11	Tasks accomplishment			+				+			+		
12	Repeating old problems	+				+				+			
13	Solving new problems			++	+			++	+		+		
14	Team teaching				++			+					+
15	Independent tasks				+				++			+	
16	Report writing		+					+	*			+	
17	Self-evaluation of results				++		+						++
18	Computer simulation			+				+				+	
19	Computer help design				+		+						+
20	Interactive simulation				++				+				+
21	Conversation				+	-							+
22	Round table				+	-						+	
23	Panel observation			+		-						+	
24	Participation in a forum				+							+	
25	Basic subjects				++				++				+
26	Excursions and visits	++	+			+				++	+		
27	Case study			+			+					+	
28	Educational projects			+				+	*		+		
29	Development projects				+			+				+	
30	Research projects				++	-					+		
31	Workshops			+				++			+		
32	Training in companies				+				++				+
33	Independent use of audiovisual aids			+				+			+	++	
34	Open learning		+	++				+				+	
35	Distance learning		++	+			+				+	++	

- = not useful

≈ = sometimes acceptable

+ = useful

++ = specifically acceptable

\* = only if it is a task

1. Knowledge (K)

2. Comprehension (C)

3. Application (A)

4. Integration (I).

## IV. SPECIFICATION OF EDUCATION AND LEARNING CONDITIONS

From the methodological point of view, the specification of work and the specification of learning are the fields of key decision making, whereas the specification of learning conditions pertains to the underlying assumptions of decision making. The specification of education and learning conditions points to the fact that the basic structural programme elements are variables open to external variables (the world of work) and internal processes and changes (education and learning conditions).

The specification of education and learning conditions comprises:

- defining entry conditions for students concerning necessary knowledge and skills,
- identifying organisational forms, methods and work techniques,
- identifying equipment and teaching aids,
- defining special technical conditions pertaining to the organisation and realisation of the teaching and learning process,
- defining education duration and pace,
- ways of evaluation and assessment,
- development and production of learning material.

The optimisation of the education process implies the accomplishment of goals in the best possible way. In that respect, the following elements are very important:

- initial situation;
- programme and learning content;
- didactical methods;
- teaching activities and learning activities;
- teaching materials.

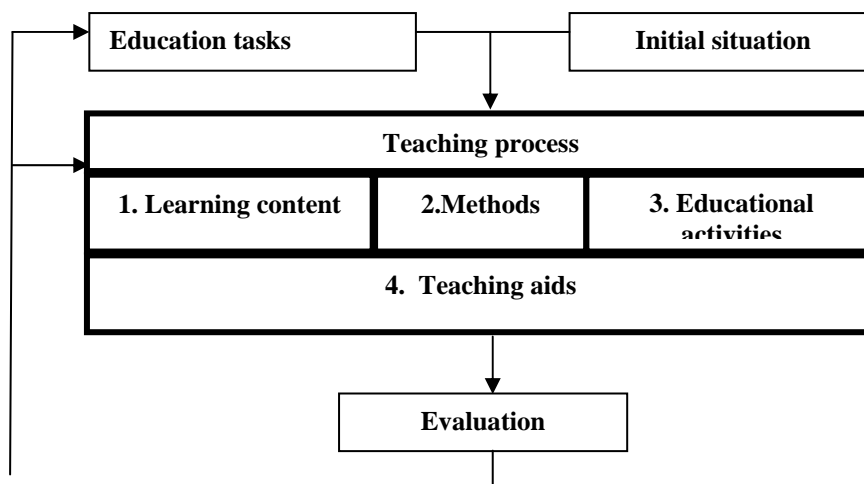


Diagram 7. Aspects of the education process

## Initial situation

The description of the initial situation in a programme is needed as the starting point of the education process and as its general condition.

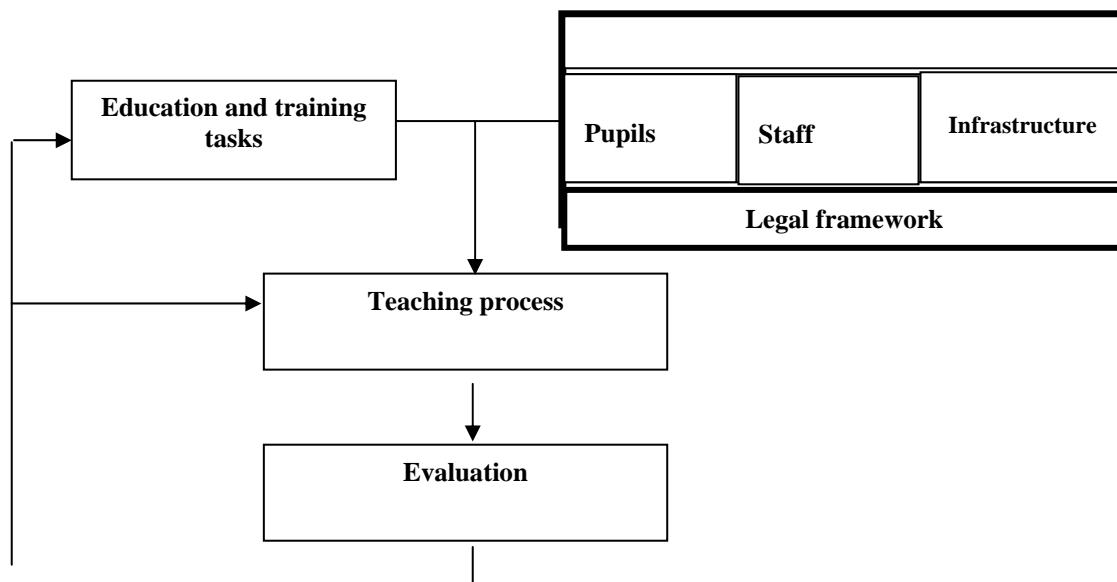


Diagram 8. The initial situation of a didactical model.

The description of the initial situation encompasses:

- students;
- teachers, trainers/instructors and school staff;
- the school and its infrastructure;
- the pedagogical approach of the school;
- the national legal framework;

### *Initial students' characteristics*

The information pertaining to the initial situation of students is needed for the realisation, but also for the strategic preparation of pedagogic climate in the school. The identification of students as the beginning of the education process implies:

### Personal development phases

- Age and sex: male/female
- Logical thinking and abstraction skills
- intellectual abilities , intelligence.

### *Practical abilities*

- personality, stability, flexibility,
- Perceptive abilities and attitudes
- Concentration,
- The ability to plan and organise personal actions,
- Individual, group and social behaviour,
- Mobility or firm connection to the family.

### Educational development phases

- Prior education, diplomas or certificates,
- Mother-tongue knowledge and skills,
- Mother-tongue communication skills, writing, oral argumentation, discussion,
- Foreign language, knowledge and skills,
- General development, the knowledge of society,
- Cultural standards and ethical norms.

### Attitude towards the chosen profession

- Motivation for the profession,
- Parents' professions,
- Professional orientation and the knowledge of profession,
- Professional language, knowledge and skills,
- Professional experience,
- Health conditions according to professional needs,
- Allergies in relation to the profession.

### Background social conditions

- Family structure and situation,
- Family members' professions,
- Family members' wages,
- Dwelling conditions.

Some of these characteristics are confidential and they can be in the form of:

- Registration forms,
- Additional documents such as diplomas, reports,
- Written diagnostic tests,
- Interviews.

### *Initial teachers' characteristics*

The information pertaining to the initial situation of teachers is useful for programme development. For the development of a programme and for the implementation of the education process the following information is important:

### Personal characteristics

Age and sex,  
Health,  
Social background,  
General image and behaviour,  
General development,  
Social behaviour,  
Ability to embark on professional and pedagogical self-education,  
Readiness to work additionally and free of charge,  
Accessibility.

### Professional characteristics

Vocational education and training,  
Present professional work experience,  
Health preconditions for the profession,  
National and international contacts and connection.

### Pedagogical characteristics

Pedagogical education and development,  
Teaching and other pedagogical experience,  
Ethic standards and norms,  
Teaching abilities and attitudes:

- instructions,
- planning,
- organisation,
- creativity,
- leadership,
- role distribution,
- verbal and nonverbal communication.

Ability and readiness to impart knowledge,

Pupil-oriented behaviour,

Skills for educational technology application: use of hardware, teaching content preparation.

### *School infrastructure*

Address, accessibility, school organisation and management.

Internal decision-making system. Who initiates, who participates and who makes the decisions pertaining to programmes and is there freedom in interpretation?

Participation of teachers, parents, representatives from enterprises in the decision-making process.

Could the relation with enterprises be used for practical training of students?

What is the kind and state of the equipment in the school and classrooms?

Does the budget for beneficiaries exist?

Do the specialised classrooms exist – laboratories or workshops?

In what manner are the educational activities organised: semester, trimesters, week plan, blocks, modules?

### *Pedagogical approach of the school*

The majority of the schools in the European Union have freedom to implement and use the pedagogical approach. This implies:

- recognising human individuality;
- upbringing function;
- the school's responsibility for students;
- quality school management.

These principles influence the following:

- applied educational methods;
- relationships between teachers and students;
- relationships among school staff;
- taking care of students' leaving and outflow;
- additional extracurricular school activities;
- contacts with parents.

Results of this influence will be expressed in the programme through activities themselves.

### *The national framework*

In certain conditions the programme development process can start without any preconditions. This can be the case when programmes are developed or when they pertain to completely new profiles, qualifications, and courses. If that is the case, the following elements can be taken into consideration:

- programme duration;

- general and professional education (relationships, connections);
- performing professional practice in companies;
- minimum teachers' qualifications;
- beneficiaries' budget;

## V. SPECIFICATION OF EVALUATION AND ASSESSMENT

In secondary vocational education and adult education there are two types of evaluation:

- evaluation of programme success and influence on socio-economic development and productivity and
- evaluation of achievements in programme adopting.

Evaluation as a process of determining the quality of education and learning encompasses: analysis, research, studying, critical thinking, examination, and attributing value to different components of education process.

The selection of components relevant to evaluation starts with the question: what can and should be evaluated in education, namely, which components will be included in the evaluation procedures system?

In this segment the following set of components is singled out as the object of evaluation:

- Educational work programme (which implies the evaluation of 1. the process of implementation/transfer of a programme from the profile and 2. the programme contribution to goals achievement) – implies the participation of external evaluators;
- Participants' work during the education process - students' (self) monitoring and (self) assessment and (self) evaluation of teachers and other actors in the education process;
- Conditions in which the process is being realised - human resources/material/technical;
- Students' entry in the process, which is (besides entrance examinations) actualised in a specific way in the field of educational work with adults - in the form of accreditation of prior knowledge and work experience, when the focus is on the short-term trainings, pre-qualification, re-qualification, in-service training and education of two and three years' duration (implies the participation of external evaluators);
- Outcomes (students' achievements - by testing knowledge and skills through gaining insight into competence development and the effects of competence development in the work process) - implies the participation of external evaluators;
- Institutions etc.

The significant part of activities related to the evaluation of different components of the education process is regulated through the processes of: standardisation, accreditation and licensing. Although, in this material, the special attention is given to the development of ways to evaluate students' achievements during programme realisation and at the end of the education process, in outcome-oriented education concept, one should bear in mind that the quality of all previously listed components exerts significant influence on the creation of overall quality of two singled out components/aspects of the education process.

The sequence of actions or steps in the development of the system for evaluation of achievements during particular implementation phases and at the end of the education process, in outcome-oriented education, is the following:

1. *Functions and tasks* are taken from the profile, i.e. occupational standard (as analysis unit either individual functions or individual tasks can be used further on – or sometimes even subtasks which form the job; the selection depends on the concrete situation);
2. Taking into consideration the selected functions and tasks as analysis units, the *education goals, sub-goals and/or tasks* are formulated. This is being done at three levels: attitude level (dominant orientations, manner and behaviour), knowledge and skills level. During this process used formulations are considered – which verbs should be used. However, there might be situations where, for some functions and tasks, the goals, sub-goals and/or tasks cannot be singled out at some of the three levels, and then again at some levels there might be several singled out goals, sub-goals and/or tasks.
3. The formulated goals, sub-goals and/or tasks are arranged in a logical sequence, which corresponds to the order the attitudes, knowledge and skills are adopted in. In this section, the formed order of adoption is divided into phases, which encompass complete sets of attitudes, knowledge and skills, which are adopted in shorter time units, and on its completion the achievements are evaluated, and this represents an integral part of the monitoring and assessment of students during the educational activities.
4. For each of analysis units (keeping the possibility of their merging and linking) the relevant *features* (e.g. automation, speed, product quantity, precision etc.) and *levels* of their development are determined, which together point out to the adoption of attitudes, knowledge and skills, i.e. the levels up to which the competence has been developed. In addition, the threshold of knowledge and skills should be determined and this threshold has to be passed in order that the competence could be possessed and maintained on completion of the education process. The major part of the work within this step relates to “criteria measure” discovery.
5. All functions and tasks are not equally significant for the performance of a particular job, and they can be, based on their *importance* or *presence*, presented in the form of percentage with a certain precision (e.g. for some jobs the quantity and quality of manufactured items are the most important parameters; for others it can be hygiene; or maybe the precision of performing certain operations; or it may be independent operating and handling particular machines and tools etc.). Also, some of the tasks can pervade several functions. This should be taken into consideration during evaluation, i.e. what should be evaluated and how much space and time should be given in the process. This step is called “optimal impediment” and it opens the possibility of expressing, if necessary, overall achievement or more general partial ones.
6. The last step, conditionally, in this sequence is the *selection of the way to measure* the level of adoption and development of particular attitudes, knowledge and skills, anticipated within the set goals, sub-goals and tasks. In this case, a larger number of quantitative and qualitative assessment techniques and instruments are at disposal.

While the evaluation of achievements by phases can be undertaken only by the teachers themselves, or some of it can be done by relevant social partners, in the team that performs the final evaluation, which is done by profiles, the representatives of the educational institution and representatives of social partners should be included. This way of achievements evaluating should provide the possibility of students’ self-monitoring, self-evaluation and self-insight into the process of development of their own competencies, which enables the creation of directions for relatively individual educational programmes.

During the evaluation process one fact should be fully considered - its methodological basis is formed by combining quantitative and qualitative techniques and instruments, and consequently the optimal combinations should be used for gaining the most valuable insight possible.

In view of the fact that evaluation functions are gaining insight, understanding and changing educational practice (with the intention of improving the education process) and that accordingly it is the basis for the intervention in the process, the evaluation of achievements should be considered as a possible source of information on quality of all other components of the education process as well.

*The possible model of evaluation in vocational education (P. Van Engelshoven)*

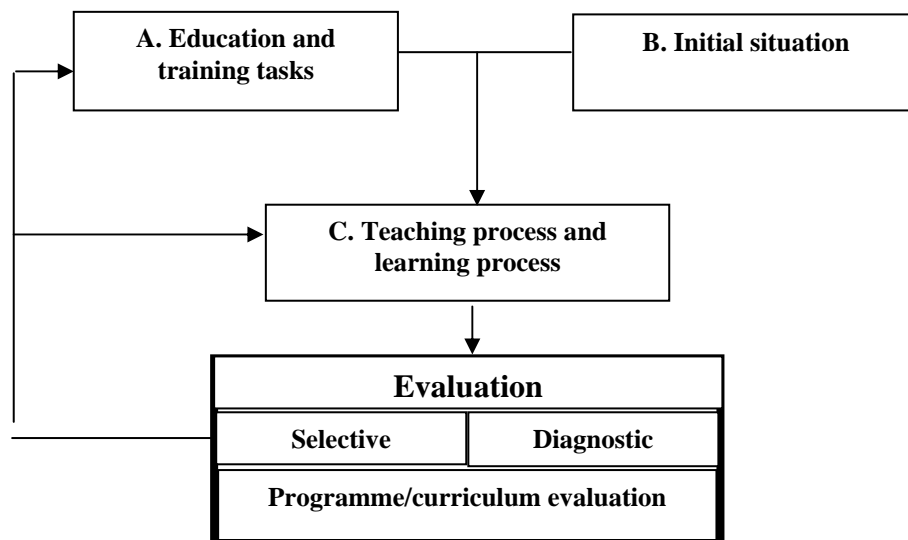


Diagram 9. EVALUATION in a didactical model

Evaluation process encompasses:

- Data collecting, obtaining information on the quality of results accomplished during the learning process compared against tasks – such as observing, interviewing, test results examining. The teacher can express the results verbally through numerical appraisal – e.g. 0...20 or 0... 100.
- The interpretation of this data can be accomplished by translating them into points, oral observation or numerical marks or the explanation for decision making. This second step can be related to the individual pupil, group but also to the teaching and learning process as a whole.

The evaluation of results of the teaching and learning process can have several functions.

### **Evaluation functions**

The teacher can use evaluation for selecting students, as the diagnostic response, as well as for motivating students and for anticipating future learning results. The pupil can use the diagnostic self-evaluation in relation to the group process or research or for overcoming gaps in knowledge. The programme/curriculum developer can use the evaluation of results as a response to tasks and as a starting element for deliberating the complete

programme/curriculum or just some of its segments. Programme/curriculum formulation should take into account these functions, which will be separately analysed hereafter.

### Selective evaluation

Selective evaluation encompasses:

- entrance exam. The results of this exam are quantified as points and they influence the candidate's place on the enrolment list.
- promotion or mobility to the higher level or final exam. In this case also, the results are quantified as points, which are translated into an explanation. Success permits advancement into the higher grade or acquirement of a diploma or certificate. The diploma can represent the acquirement of a professional qualification (e.g. dental technician, qualified welder etc.).

### Diagnostic evaluation

Diagnostic evaluation provides information on students' achievements indicated as learning results. If the learning results are compared against the results that should be accomplished in relation to tasks, the teacher (or the pupil) can analyse possible weaknesses of the learning process. Diagnostic evaluation should provide a response to the pupil and/or the teacher concerning the quality of the teaching and learning process.

### Motivational evaluation

Frequent testing regularly provides students with quarterly results of the learning process. Teachers show interest in students' learning process. The situation where students face quarterly results stimulates regular learning and improves learning activities and results.

### Anticipated evaluation

Within the framework of certain conditions and limitations, test results can be used for anticipating learning results in future types of education and training. Research has shown high correlation between the results achieved in:

- mathematics in the final year of secondary education and success in studying at technical faculties;
- literature and success in studying law and legislation.

However if the time span between the anticipation and the accomplishment is too long, the anticipated value of evaluation will be diminished. Consequently, tests performed among twelve-year-old children have only limited value in terms of anticipating future success at university (18 years of age).

### **Methods of data collecting**

Evaluator can collect data on how the pupil accomplishes envisaged tasks in either direct or indirect way. During this process different methods can be used, which is shown in the following table:

Data collecting	Direct way	Indirect way
Pupil	<ul style="list-style-type: none"> <li>- Behaviour observation:</li> <li>- task accomplishment</li> <li>- presentation</li> <li>- discussion</li> <li>- role distribution</li> <li>- Interviews</li> </ul>	<ul style="list-style-type: none"> <li>- Multiple choice task</li> <li>- Questionnaire</li> <li>- Open questions</li> <li>- Essays (written papers)</li> <li>- Audiovisual report</li> <li>- Mentor's report</li> </ul>

	- Oral testing (checking)	- Problem solving
Pupil's products	- Manufactured products - Report on their own activities - Report presentation	- Limit of toleration - Product manufacture - Sales figures

Data collecting could be a continuous process during the learning period, but the evaluator can also organise a test or exam as a separate way of data collecting.

The collected data is frequently translated into numerical points with the defined minimum and maximum values. Points depend on the evaluator him/herself and are frequently expressed through the point range between 0 and 100. The evaluator has to prepare the standard for the test itself in order to be able to determine the points.

The choice of collecting methods also depends on:

- infrastructure surrounding the learning process, such as the time for the testing or the national examination period, set in advance.
- types of tasks which will be evaluated:

Optimal method of collecting data for education tasks evaluation		Type of education tasks											
		Cognitive level				Psychomotor level				Affective level			
Method of collecting		K	C	A	I	K	C	A	I	K	C	A	I
01	Written test, questionnaire	+	+	*	-	-	-	-	-	+	+	-	-
02	Written test, Open questions	+	+	+	+	+	-	-	-	+	+	+	-
03	Written test, old problems	+	+	-	-	-	-	-	-	+	+	-	-
04	Written test, new problems	-	+	+	+	-	+	-	-	+	+	+	-
05	Oral interview	+	+	+	+	*	**	**	-	+	+	-	-
06	Oral problem solving	-	-	+	+	-	-	-	-	-	+	-	-
07	Observation during simulation	-	-	+	+	+	+	+	+	+	+	+	+
08	Observation during practice	-	+	+	+	+	+	+	+	+	+	+	+
09	Report on tasks examination	+	+	+	+	-	*	*	-	+	+	+	+
10	Report on the practical task	-	+	+	+	-	-	**	**	-	+	+	+
11	Analysis of the concrete product	-	-	+	+	-	+	+	-	-	-	-	-
12	Analysis of the written report	-	+	+	-	-	-	+	-	-	-	+	-
13	Analysis of the oral report	-	-	+	-	-	-	-	+	-	-	+	+
14	Interviews with other associates	-	-	+	+	-	-	+	+	-	-	+	+
15	Report of tutors, mentors and leaders of particular activities	-	-	+	+	-	-	+	+	-	-	+	+

- = not useful

+ = useful

++ = specifically acceptable  
\* = just for this task

## **APPENDIX**

Taxonomy of pupil's behaviour	Some of the classifying verbs for concrete education tasks		
	Cognitive aspect	Psychomotor aspect	Affective aspect
<b>Knowledge</b>	repeat, recognise, perceive, determine, state, expect, point out	show, perceive, copy, imitate, sense, recognise scent or taste, give, repeat, point out	state, tolerate, be conscious, accept comments, hear different opinions, listen, focus attention
<b>Comprehension</b>	describe, explain, identify, classify, characterise, collect, compare, read	demonstrate principles, collect, attempt, try, show, selectively observe	accomplish undivided attention, accept different opinions, mandatory response to rules, respond to questions, ask questions, participate
<b>Application</b>	elaborate, fill, illustrate, control, produce, translate, explore, analyse, calculate	attempt, make, apply in practice, train, construct, utilise, maintain, accomplish, use skilfully, assemble, disassemble something, see, cut, cook	apply norms and values, apply rules, collaborate within group, motivate
<b>Integration</b>	choose, design, plan, estimate, evaluate, identify, synthesise, adapt, spontaneously act	assume the right attitude, select the right material, use instruments in the right way, automatic action, perform without hesitation, work carefully, control one's own work, improve	spontaneous answer to rules, spontaneous application of norms and values as the basis for handling, find satisfaction in handling, initiate collaboration, create enthusiasm

