

In trying to follow these five considerations, the curriculum of the new study course has been structured in seven teaching areas:

- Environmental policy, incl. environmental law,
- Land use economics,
- Economics of tourism and recreation,
- Natural resource management,
- Environmental economics,
- Enterprise environmental management,
- Methodology of environmental economics.

It has been mentioned before that the program ENARECO is unequalled in the combination of teaching areas and courses offered. Hence, it will certainly not only serve as a model for other universities and higher educational institutions in Ukraine, but will also set an example for many other countries. Of course, teaching contents are subject to permanent changes; therefore, ENARECO will also change its appearance continually in order to keep pace with current developments.

Dr. Norbert Weber – Germany

DIDACTICS OF THE STUDY COURSE ENARECO

It is discussed that the new study course Environment and Natural Resource Economics (ENARECO) places high demands not only on the students, but also on the involved teaching staff. It must be guaranteed a high educational standard of teaching. Therefore, great importance is placed on the integration of accepted didactic principles in the planning of the study course ENARECO. This effort was impeded by the clearly poor teaching conditions at the Ukraine university when compared to Western standards. Due to an insufficient supply of teaching materials (books and texts) in the conventional courses, a passive attitude is prevalent among the students. Nevertheless, considerable headway was made in the implementation of the new study course where questions of didactics are concerned.

Д-р Норберт Вебер – Німеччина

Дидактика навчального курсу ЕНАРЕКО

Розглянуто, що новий навчальний курс економіки довкілля та природних ресурсів (ЕНАРЕКО) ставить високі вимоги не тільки до студентів, але й до залученого викладацького складу. Повинен гарантуватися високий освітній рівень викладання. Тому велика значимість надається інтеграції акцептованих дидактичних методів планування навчального курсу економіки довкілля та природних ресурсів (ЕНАРЕКО). Ці зусилля затруднені гіршими умовами викладання в українському університеті порівняно зі західними стандартами. Відповідно недостатньому забезпеченню навчальними матеріалами (книги та підручники) переважаючим є пасивне відношення студентів. Тим не менше, суттєвий поступ був зроблений у впровадженні нового навчального курсу у тих випадках, коли приймалися до уваги вимоги дидактики.

Due to its future-oriented and exemplary nature for Ukraine and Eastern Europe, the advanced study course Environment and Natural Resource Economics places high demands not only on the students, but also on the involved teaching staff.

The Ministry of Education of Ukraine generally promotes the use of advanced pedagogical concepts and methods, and the training of a new generation of teachers. The adaptation of university education to worldwide standards and expectations is an explicit goal. Master's graduates (level IV in the Ukrainian educational system) should possess a thorough knowledge and have the abilities to meet the challenges of their pro-

fession. Moreover, the Ministry decidedly supports the concept of Lifelong learning. New teaching methods are designed to solve the problem of internal motivation among teachers and students (Ministry of Education of Ukraine, 1997).

The specific and extensive demands toward the education of ENARECO students have been compiled in official guidelines (Educational Professional Program, Qualification Characteristics, and Educational Plan). Special emphasis is placed on the Qualification Characteristics, which describe the demands which future graduates are likely to encounter. This not only sets the prerequisites of the study course (following the official recognition of the course) but also represents an obligation to employ principles of modern teaching methods in the students' education.

The study course ENARECO is defined by a number of characteristics that carry great didactic importance for the style of teaching:

- the course is being offered for the first time in Ukraine; no previous experiences from other universities in the country are available;
- the study course admits students with different qualifications (e.g. students with first degrees in a variety of subjects, e.g., economics, law, biology, ecology, agriculture, forestry);
- ENARECO is an inter-disciplinary course, spanning a multitude of subjects from different scientific fields (e.g. natural sciences, arts and humanities, social sciences, technical-scientific approaches);
- from a scientific point of view, there has been a rapid advance in knowledge concerning all aspects of environmental protection and natural resources, which can be seen in the vast increase of internationally available literature;
- the teaching contents are characterised by extremely complex problem settings and multi-dimensional interconnections;
- ENARECO students must be ready for practical work within two years, since there exists a great need for action for solving the environmental problems and sustainable use of natural resources in Ukraine.

Due to the specific character of an advanced study course such as ENARECO, special attention must be given to the teaching of key skills that can give the students the abilities and qualifications required for the professional practice. This has been addressed by the content and type of Units that are studied (e.g., applied environmental policy; mechanisms, problems and conflicts in land use; planning, management and analyses). In general, graduates should gain the ability to both analyse and solve environmental problems. They also ought to be able to develop and implement concepts for a sustainable use of natural resources.

In considering the teaching methods for the ENARECO a revised approach is needed, encompassing methods used for adult education, as participants tend to be older than the average student. All students will have already completed a first degree and so would have developed, to a certain extent, their own individual working techniques and self-confidence. Also it is likely that in the near future mature students will be targeted, those who have completed their initial studies quite some time ago, particularly when the advanced training centre at the USUFWT is established in the near future.

Based on experience, it is generally recognised that a reduction in attention span and short-term memory occurs from the age of 30 onwards, while technical and social competence remains on a high level for longer periods. This creates a number of learning impediments typical for adult education. Therefore, the use of a variety of input methods is particularly recommended. Teaching should be connected with pleasurable

experiences and at least part of the Subject Unit matter should be presented as a series of discoveries. Wherever possible, students should be given the opportunity to "discover" knowledge on their own, e.g., through problem solving or experimentation. Finally, unknown subject matter should be connected with familiar experiences and sensations to avoid learning block (Netzel, 1992).

Basics of Modern Higher Education Didactics

Paradigms of didactics. Didactic considerations for teaching methods are usually based on the following questions:

- Which contents can and should be passed on?
- Which methods should be employed?
- Which activities further the teaching process, and which impede it?
- How can the teaching of larger educational goals within the subject be realised?

To answer these questions it seems necessary to consider take a look at the current, internationally accepted paradigms of higher education didactics. Four of special importance for the study course ENARECO are: constructive conception of learning; consideration of meta-communication; interactive curriculum planning; and the so-called Lifelong learning.

A constructive teaching or study approach is ideally characterised by the following:

- learning at first hand of complex, authentic problems;
- articulation, i.e., clarification of those learning and problem-solving processes which normally occur internally (comparison of own approach with that of experts and fellow students);
- principle of multiple perspectives (knowledge and abilities are acquired and implemented in different contexts and with different goals);
- co-operative learning (comparison of own approach with that of other students which also enables productive conflict solving, leading to new understanding);
- enculturation, i.e., the acquisition of thought patterns, expert tricks, conviction systems and ethical standards of members of the respective professional groups (Mandl *et al.*, 1993).

Even though the constructive approach has generally become subject to a certain amount of criticism due to exaggerations within the school system, it still offers a valuable orientation tool for the development of Subject Units.

Long-term experience at schools, universities and advanced education centres has shown that the success of teaching is a complex process. Not only does it depend on contents but also the relationship between students and teachers, and among the students themselves. These processes are combined under the term "meta-communication". Teaching thus always contains at least two aspects: the content oriented or factual aspect-, and the relationship aspect. The factual aspect refers to the course contents (that which is taught: time frame, media use, purpose of the subject event, etc.) which are usually already known to the participants. The relationship aspect (psycho-social level) focuses on the character of the teacher: i.e. how he relates with the students, how he values the students, and the affective elements, of which as acceptance, trust, sympathy, climate and dominance, play an important role (Marks, 1995).

Curriculum development was formerly dominated by strictly rational planning models, primarily characterised by predetermined structures and following a "top-down" approach. As a rule, curricula were developed by committees on the highest level

(ministry, university administration), without involving the level responsible for actual implementation. The predominant view now, acknowledges the need to involve the future teaching staff in the development of a curriculum. This is particularly relevant on the micro-level of curriculum development (i.e., for the planning of a single Subject Unit) but also applies with certain restrictions to the meso-level (i.e., the scheduling of Subject Units for a study course at the university level) and to the macro-level (i.e., the setting of national framework guidelines) (Bor, 1998).

Lifelong learning means the development of the human potential through an ongoing, supportive process that animates and enables individuals to acquire all the knowledge, values, abilities and insights needed throughout their lifetime. The individual should be able to implement these abilities with trust, creativity, and pleasure in all roles, circumstances, and environments (Longworth, 1997). During the ministerial conference of the OECE in January 1996, three main reasons for the importance of lifelong learning were stated: it serves the enrichment of human life, furthers the economic growth and maintains social ties. Lifelong learning requires the following abilities (Longworth, 1997):

- learning to learn;
- practical application of new knowledge;
- to ask questions and search for justifications;
- leadership of oneself and others;
- sensible use of information;
- acquisition of communication skills;
- teamwork;
- problem solving abilities;
- adaptability and flexibility;
- understanding the need for advanced development of personal competence.

At this point, the connection with another important basic principle of modern didactics becomes apparent, i.e., the support of so-called key skills. These involve individual prerequisites for the flexibility and developmental ability of the human capital. In the cognitive area, this mainly includes logical thinking and the ability to concentrate, the readiness and ability to learn as well as elements of social competence (ability to form contacts, planning ability, co-operative behaviour, and verbal competence). It is obvious that employers worldwide have begun to expect these skills from university graduates (Webler, 1991).

Requirements of Teachers. Teachers ought to be able combine control of their Subject Unit, didactic knowledge, and a thorough understanding of the environment in which teaching and learning occurs (Bor, 1998). They must lead the students toward an independent, scientific working method and a self-confident ability for factual evaluation within the context of each Subject Unit. This requires a number of pedagogical key skills. Besides the indubitable importance of fully knowing and understanding their Subject, teaching competence is also necessary. Teachers should develop the ability to create a balance in their teaching between the imparting of knowledge, personal student and social group experiences. Here, a sensible attitude for the problems with in a group, such as tensions within, learning disabilities and fatigue, and for a flexible reaction to the climate within a study group is a helpful asset. Another important prerequisite is the so-called openness towards learning. This means that teaching is understood as a co-operative process and; the teacher at times adopts the role of the moderator. An additional important characteristic of a good teacher is a calm attitude, i.e. the giving up of

absolute control while considering the internal dynamics of the study group. A high level of engagement and self-reflection are also necessary (Tippelt, 1994).

The careful determination of training and teaching goals plays a central role, especially in advanced study courses, since study time is usually limited and the students are under high pressure to succeed. The following general categorisation of teaching goals (according to Berendt, 1994) may serve as an introduction to further considerations in this regard:

- Knowledge. At the end of a Subject Unit students should be able to repeat the basic terms of the Unit from memory, describe the principles (concepts) of the Subject, list a number of applications, and identify the principles and potential applications of related Subject Unit.
- Practical Abilities/Skills. Under this heading, students should demonstrate their ability to concisely explain facts in writing; express themselves clearly and convincingly; arrive at an independent judgment; receive, select and effectively structure information; demonstrate creative and imaginative thinking; work effectively in a team with others; and to be adaptable (e.g., to deal with changing thought patterns).
- Attitudes. In addition to the items mentioned above, students should have an increasing enthusiasm for learning, an interest for scientific thoroughness, and an openness for moral, social, economic, political, and scientific problems in the context of the Subject Unit.

For the advanced study course ENARECO course, the practical abilities, skills and attitudes are most likely to be of special importance. As multi-talented future leaders in the environmental sector, graduates must be able to demonstrate many numerous key skills. The listing of "Qualification Characteristics of the Master's Degree ENARECO" clarifies the requirements of teaching goals.

Implementation of Didactic Concepts in the Study Programme ENARECO

Study-specific Opportunities and Restrictions. For the implementation of the principles of quality teaching in the ENARECO course, there are a number of supportive but also some impeding conditions. Among the positive influences there are:

- numerous young, highly motivated lecturers who can seek advice council from experienced professors, if necessary;
- training of lecturers abroad (Belgium, Germany, Italy);
- support of the teaching staff through Western partners during development of curricula;
- availability of modern, internationally relevant literature;
- availability of basic technical equipment (computers, software).
- There are also a number of negative factors that must be considered and which will most likely only be solved during the course of the next few years:
- uncertainty about the profile of expectations that future graduates must meet;
- little or no teaching experience in some of the lecturers;
- co-operation and synchronisation of teaching contents between the lecturers is only in its initial beginning stages;
- differences among entry level qualifications of students from different Subject Units;
- difficulties in adapting foreign patterns and solution models to the conditions in Ukraine, and passing these modified insights on to the students.

Working group Didactics. A special working group Didactics was created for the permanent implementation of the didactic concepts. The working group has been instructed to oversee the project in all aspects of didactics, from the beginning of the planning up to the implementation of the study course. The previous experiences at the Ukrainian partner university with the organisation of its study courses formed an impor-

tant prerequisite for this work, enabling the development of an approach which proves operational for the conditions found in Ukraine.

The working group has set the following goals:

- to put together a synopsis of comparable study courses in the field of "Environment and Natural Resource Economics";
- to analyse the employment market of Ukraine as a basis for key skills;
- to explore the possible applications for a variety of teaching methods;
- to develop recommendations for the compilation of teaching materials;
- to develop a didactics manual for teachers.

Even though there were considerable differences in the analysis of the employment market due to the complex situation in Ukraine, all these tasks have been could recently be completed.

Development of a Topical Didactics Manual. For the ongoing support of the teachers of the ENARECO course, a didactics manual has been compiled which considers and expounds on the topics listed above (Weber, 1998). All topics were illustrated with examples from the various Subjects of the study course. This topical didactics manual has meanwhile been translated into Ukrainian and will soon be distributed to the teaching staff in Lviv.

This manual has several goals. It contains a number of planning aids and practical examples that can be used in the organisation of Subject Units. Also the invoking of a conscious realisation of the importance of university-level teaching is aimed at, and giving an impetus for an intensified exchange of experiences between lecturers.

The manual is primarily aimed at younger lecturers, who may possess well-founded specialist knowledge (on the basis of which they were selected to teach in the new study course), but who are still lacking teaching experience. For older lecturers, the handbook may offer some valuable hints for partial improvement of certain time-honoured teaching procedures.

The topical didactics manual contains background information, recommendations, and examples. It also includes elements from the theory of adult education and supervision. An attempt was made to link the practice of teaching with the specific problems of the ENARECO course.

Training measures and intensification of exchange between teachers. In June of 1998, a topical didactics training day was conducted for teachers in the study course ENARECO. On this one-day seminar the following topics were discussed, which also form part of the contents of the manual:

- characteristics of quality teaching,
- teaching and study goals,
- planning of classes,
- conditions for teaching and learning,
- teaching methods,
- practical elements in university teaching,
- self-study and observation of individual teaching success,
- media use,
- composition of written documents,
- evaluation of teaching and study success,
- crisis management in classes.

The event was characterised by a constructive working atmosphere and a great readiness for active co-operation among the participating lecturers.

Based on the fact that the new advanced study course would lead to completely new requirements concerning both contents and organisation of higher education at USUFWT, the simultaneous intensification of internal exchange between the lecturers of the new study course was deemed necessary. To this end, several teaching staff meetings have been conducted, during which a variety of didactic topics were discussed. These meetings have proved useful and will continue to be held in the future.

Future Prospects

In any internationally-orientated study course, a high educational standard must be guaranteed. Therefore, from the outset great importance was placed on the integration of accepted didactic principles in the planning of the study course ENARECO. This effort was impeded by the clearly poor teaching conditions at the Ukraine university when compared to Western standards. Due to an insufficient supply of teaching materials (books and texts) in the conventional courses, a passive attitude was prevalent among the students. Nevertheless, considerable headway was made in the implementation of the new study course where questions of didactics are concerned. This includes the great engagement of the teaching staff during the preparation of Subject Units and in the use of modern didactic methods.

The so-called project studies also deserve special mention, which are based on the goals of ENARECO, and represent an important element within the new study course. They are centred around inter-disciplinary work on actual objects or cases. The subject areas of economics, nature conservation, tourism, and sustainable land use are particularly well suited for project studies. The readiness of the teaching staff for critical discussion of teaching contents and methods, and their agreement to allow students to evaluate their teaching abilities, also added to the project's success.

It is envisaged that the innovative ENARECO course will serve as an example in the field of didactics, and will in time influence other programs at USUFWT and other universities in the Ukraine.

Jan W. Dobrowolski, Professor, Ph. D.; Aleksandra Wagner¹, Ph.D.

INTEGRATION OF ECOLOGICAL AND ECONOMIC PROBLEMS IN NATIONAL AND INTERNATIONAL TRAINING ACTIVITIES IN POLAND (SELECTED EXAMPLES)

One of the pioneers of combining ecological and economical approach in environmental issues in Europe was Professor Walery Goetel – former rector of the University of Mining and Metallurgy (AGH) in Cracow. Over 50 years ago he initiated a concept of sustainable management of natural resources (i.e. the idea close to the concept of sustainable development). Professor Goetel was also the founder of the Club of Technologists and Humanists. Its activities were focussed on the humanisation of the development of technology for the improvement of human environment and the quality of life for future generations. Professor Goetel has also initiated first in Poland, open to all seminars on the sustainable use of natural resources (both mineral deposits and biological resources). One of turning points in the formation of the concept of sustainable de-

velopment was adopted by the General Assembly of IUCN in Edinburgh in 1956 Goetel's recommendation to change the name of the organisation into "International Union of the Protection of Nature and Natural Resources".

These seminars were announced in mass media and followed by the discussion of experts and general public. Professor Goetel combined his scientific interest (hydrogeology) with the stimulation of physical activities among the university students. He was one of the founders of the Academic Sports Association (AZS) – namely rowing section. These activities were linked with environmentally friendly tourism (eco-tourism) connected with the protection of nature and landscape of high mountains.

One of the authors (JWD) has initiated in 1967 the out-of university training in the management of human environment based on the integration on natural sciences, social sciences and technology. These voluntary activities were recommended as the supplementation of traditional narrow-oriented training at universities. The main purpose of this concept was problem-oriented training related to interdisciplinary case studies in different regions. The first national school of the human environment was held in the first in Europe border park in the Pieniny mountains in 1968. The first international summer school related to sustainable development in protected areas was organised in 1972 in the Pieniny and Tatra Mountains. The same year the Polish Committee of Young Scholars and University Students for Environmental Management and Protection was established. Polish methodological experience in this field was found useful for the development of interdisciplinary research and common action of NGOs and experts in different European countries as well as USA, India and Japan for stimulation of international cooperation in the Baltic and Carpathian region as well as in the connection with the contribution of youth NGOs to the UN Conference of the Human Environment in Stockholm – 1972. Later on these activities were developed at the UN Summit in Rio de Janeiro in 1992 and followed by Agenda 21.

In 1989 the Technical Open University at AGH was established. This includes lectures followed by discussion, participated by all the interested including high school students, university students (of different subjects), graduates (engineers, economists, teachers, journalists) and general public. From the very beginning one of leading subjects of the activities has been the promotion of sustainable development, starting from the interdisciplinary discussion on the G. Brundtland's report "Our Common Future".

The start of the Technical Open University coincided with great political and economical changes in Poland and other Central and Eastern European countries. Switching from central-planned communist economy into market economy made new challenges for the environmentalists. Undoubtedly the fact that the information on environment was not secret any more and that the society could influence the government was beneficial for the environment. The fact that heavy industry was reduced to smaller scale caused social problems, but was also good for environment. On the other hand market economy is profit-oriented. Sometimes the investors thought only on maximum profit in a short time neglecting environmental issues. These problems were subjects of the series of lectures of the TOU.

Also in 1989 the exchange scheme between the students of the AGH and Sunderland Polytechnic (later on University) took place. The exchange included study visits and joint training activities (starting from the international summer schools in Poland) related to common action for solving similar environmental problems in both countries. There were three such problems:

¹ University of Mining and Metallurgy, Chair of Environmental Biotechnology and Ecology, Kraków, Poland