

Sm05

HORTICULTURAL EDUCATION AND TRAINING IN THE AGE OF INFORMATION, BIO AND NANOTECHNOLOGY

Sm05.001

Knowledge Transfer for a Horticultural Revolution: The Lifelong Learning for Farmers Model

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Agricultural education and extension currently occurs within a framework inspired by the green revolution. However, the green revolution had its focus on cereal crops whereas horticulture is a different and more dynamic element in the rural economy. Horticulture demands more active management since it is highly influenced by market forces, adds greater value and is more labour intensive. The green revolution was promoted largely by uni-dimensional technology transfer whereas advancing horticulture requires multi-dimensional knowledge transfer that integrates people, content, culture, process, infrastructure and technology. The Commonwealth of Learning is attempting to make this paradigm shift through its Lifelong Learning for Farmers (L3F) model which is based on these principles: - The aim of extension is to empower the community to manage its agricultural knowledge and information system; - Extension occurs within existing networks and social capital such as cooperatives, associations and self-help groups; - The community is not just a consumer of information but an active participant in knowledge management; - Self-directed learning within the community is an important dimension of L3F because of the dynamic nature of horticulture; - Through the L3F process communities understand and internalise Value Premise Analysis, Value Chain Analysis, Value System Analysis and Value Coalition Process in the primary sector; - The role of the extension agency is to help the community manage its knowledge and transform social capital into social learning capital. Real-life applications of L3F in several countries are presented.

Sm05.002

Knowledge Management Systems of the Virtual Academy of Semi-Arid Tropics (VASAT) Used in Creating Learning Activities and Outcome Assessment of Online Student Learning

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Virtual Academy of Semi-Arid Tropics (VASAT), at the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) is pioneering in partnership with several international organizations in innovative knowledge management systems including Agropedia, Agrovoc, Topic mapping, and concept mapping. Agropedia, a platform designed by a host of institutions jointly (<http://agropedia.net>) strives to collect agricultural information on the World Wide Web using semantic tools to create a repository of re-usable information objects for knowledge sharing and capacity building. Thus Agropedia hosts a wealth of knowledge posted by professionals practicing in the field. Topic maps and concept maps are helpful in creating associations between and among topics and concepts constructing meaningful connections in teaching and learning. Agrovoc (www.fao.org/aims) is an ontology in agricultural information management that has been revised from being a thesaurus to an ontology. These provide for innovative learning activities and outcomes assessment of student learning in horticulture related topics in natural science curriculum. These tools also offer a creative way of testing student learning at various

levels. In an undergraduate course BIO 414 Biotechnology for food and nutrition security knowledge about a single crop that has been modified and/or improved using biotechnological tools is presented as a concept map and asked to develop one on their own to help in structured organization of knowledge. As part of the class discussion students are turned to reading the postings in Agropedia by experts and submit possible blogs on related topics. Samples of learning activities and outcome assessment will be presented.

Sm05.003

Experiences in Teaching Horticultural Plants Using e-Resource Materials

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Electronic resource materials, including plant databases, computer-aided learning programs and web-based materials, are widely used to support teaching and learning in horticulture. How effective are these e-resources in developing 'deeper learning' skills in students? Many materials are focussed on plant recognition and identification and minor aspects of cultivation and use; few relate these aspects to plant selection - where interaction, engagement and problem-solving skills are crucial. This paper will present a case study on the use and evaluation of e-resource materials in the teaching of ornamental and landscape plants over ten years in University horticultural courses. Resource material types and applications, curriculum and assessment design, student uses, and student feedback will be discussed in the context of how this learning is used and applied by students. The paper will also present the results of a survey of former students to determine how they use e-resources in plant selection in urban landscapes.

Sm05.004

Professional Development Programmes - Developing an Horticultural World-Wide-Web of Learning

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The horticulture industry and teaching institutions, in many regions, reports a decreasing pool of practitioners. We know that formal tertiary-based learning provides the platform for industry and that local certification and accreditation schemes recognise skills. Of equal importance, but often lacking, is the provision of opportunities for those currently in the industry who seek ongoing flexible professional development, recognition for skills and expertise and access to the sharing of information and mentoring by those who are peers or respected practitioners. Access to innovative, flexible professional development is limited not only in developing world regions, but also respected advanced horticultural societies. Today's information highway, freedom of access and expanding transportation systems provide opportunities for sharing skills and supporting innovative projects. Through access to a world-wide-web of learning and professional development the horticulturist can explore learning and apply newfound skills for a breadth of scenarios. So how can we make the most of new opportunities and technologies as an aid for professional and industry development and support an horticultural world-wide-web? This paper presents innovative approaches and flexible models for professional development that are inclusive of a mix of skill levels, coupled with a mentoring approach for individuals and workplaces, and locally or remotely supported. Examples of the development and implementation of professional programmes based upon Australian industry and Singaporean government projects that were designed with structured content, participant review and project-based assessments, will be described and outcomes presented. A.I.M.S specialise in defining industry needs and develop innovative training and development programmes for the horticulture industry, in Australia and Singapore. Recent projects have included the development of international community based consultation for three Singapore government based projects - the development of the Landscape and Floristry industry Work Skills Qualification Frameworks and the Certified Practising Horticulturist programmes.

Sm05.005

Horticultural Education - Modernising the Brand: A Case Study from the University of Sydney

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Horticulture at the University of Sydney is part of the prestigious teaching activities of the Faculty of Agriculture, Food and Natural Resources. Over the last 15 years, student recruitment to agriculture/horticulture/production degrees has decreased across the world. A new project involving market research, audience profiling and a design implementation targeting Gen Y is currently underway which aims to identify and address misconceptions of agriculture/horticulture and attract new students to tertiary education in these areas. This presentation will present the research findings of this case study, examples of new web based resources and the impact results of this innovative initiative.

Sm05.006

How We Teach More Effectively Hort-Biotech According to the Heritage of the Founding Father, Károly Ereky?

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In the late 1980s Robert Bud discovered the significance of Károly Ereky, the founding father of the term "Biotechnology". Ereky spend a lifetime giving substance to his vision of a new era of technology based upon biotechnology. He devised strategies focused upon the remediation of famine threatening mankind. He was deeply convinced that the material welfare would be based upon the joint application of natural sciences, techniques and economics. Although his activities after a brief moment of fame as Hungary's minister of nutrition in 1919 to his death in 1952 have been obscure, he was a prolific writer. He seems to have been responsible for more than 400 publications. His classic work, "Biotechnologie" which appeared in Berlin ninety years ago in 1919, defined the new discipline. The secrets around Ereky's achievements in biotechnology came to the light after more than 80 years. With proofs of his scientific publications we have to recognise that he did not only coin the concept of "biotechnology" but developed the "fundamental principle of biotechnology", as a new horticultural/agricultural production strategy for the next generations. Many of his practical suggestion turned out to be correct, became realised or are realised currently. Today, we see it already clearly that the biotechnology "promotes the production of organic substances of the horticulture/agriculture up to the level of an industrial plant and helps mankind in struggle of life". Our presentation will illuminate in detail that unique and highly effective training and education system in which Ereky had been formed during the last decade of the nineteenth century. Many of them, combined with some new technical devices can be considered as fruitful issue even for the 21st century's horticultural education.

Sm05.007

Horticultural Higher Education in Hungary

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History of horticultural training in Hungary has begun in 1853, when Ferenc ENTZ, a medical doctor, established the School for Practical Gardening. In 1894, it was raised to the rank of Royal School of Horticulture, with three years of training. The School has gained its university status in 1968. Since 1971 the Kecskemét College was the part of our university for a long time. Currently Faculty of Horticultural Science has 15 departments all dedicated to different disciplines related to horticulture. Practical training is a very stressed point of our education system, which is served by an own Experimental Station and a Botanical Garden near the city border, and an arboretum in the Buda Campus. Research Institute of Viticulture

and Enology at Kecskemét, as part of Corvinus University, takes also a great part of practical education of the Faculty. There is no other university in Hungary, and even in Europe, where horticultural higher education would be so detailed. In the neighbouring countries we have three distance education centres too. Before adopting the Bologna system, we were carrying on dual training, i.e. both college and university level. Together with the Bologna process we have turned to linear training. That time horticultural higher education started in several places in Hungary, but still we share more than two thirds of enrolment. Horticultural training takes seven semesters BSc, one of which is dedicated to practical work in a partner institution (enterprises, farms, companies etc.). Students now may chose among four different MSc courses, of which full curriculum of MSc in Horticulture is given in English too. Together with four other European Universities (in Munich, Berlin, Vienna and Bologna), we have launched a multiple degree training. We have intense student and staff mobility programs with 27 Erasmus, and 10 CEEPUS partner universities in Europe.

Sm05.008

Assessing the Worker's Educational Needs in Lorestan Greenhouse Complex in Iran

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One of the essential factors for successful in any activity is pre services education. For having a good educational planning, first step is assessing the educational needs of clientele. In Iran a green house complex was established for produces fruits and flowers massively. For delegating the green house to demanders, must be educated in related subjects including floricultures and olericultures. According to experiences modules which must be educated to clientele including two educational need categories: a) managerial modules: Farm management (Supply and Demand), marketing management, directing and controlling of personnel, accounting and financing methods, entrepreneurial skill and; b) subject matter modules: conditional cue such as temperature, humidity and light controlling, air condition, cooling system, weeds, pest and disease control, physiological factors management, media selection, selection of crop type, water use, nutrient management and application of fertilizers (nutrient solution concentration, hygiene care, plant spacing and density, post harvest skills, handling of crops, harvest time, packaging, pollination management, pot type selection, water and soil characteristics (pH, EC), culture systems and power sources management.

Sm05.009

Challenges and Opportunities in Postharvest Horticulture Research and Training in Developing Countries: - The Case of Kenya

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Kenyan horticulture industry has grown to become a major foreign exchange earner, employer and contributor to food needs. Currently, it is ranked second in terms of foreign exchange earnings after tourism. Public sector horticultural research in Kenya is conducted by Kenya Agricultural Research Institute (KARI) and public universities as a public good. Challenges in postharvest (PH) horticulture research and training include inadequate funding (<5%), poor research infrastructure, shortage of trained PH manpower, low student enrolment, lack of access to current literature and inadequacies in policies. Also, slow bureaucratic procedures in public institutions undermine their ability to respond to urgent farmers' requests. Moreover, farmers need low-cost PH technologies adaptable to different regions and scientists need better social science skills for technology transfer from laboratories to the farms. Opportunities in PH horticulture research and training include faculties of agriculture in Kenyan universities that have established departments for horticulture, postharvest and handling, food technology and processing. Activities for the development of adequate PH capacity include training, education, extension and technology transfer. Due to very limited resources, PH research is directed towards very specific problems and 'knowledge-generation'. Additionally, Kenya

has a well-developed and dynamic private horticulture sector which presents an ideal investment opportunity for potential investors with ready markets for their produce. A successful approach to maximize PH horticultural research and training input would be the development of programs with public-private partnerships having evolving roles. Furthermore, the growing importance of environmental concerns presents opportunities and challenges for PH research in Kenya.

Sm05.010

Enabling Student Research in Fresh-Food Chain Management - Experiences with the Introduction of Problem-Based Learning into University Curricula

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The two cooperation EU-projects ValueLead and DOCUMAP within higher education were launched with the objective of facilitating students at our African and Asian partner universities to be educated in sustainable and quality-oriented fresh-food chain management (FFCM) with the focus on poverty alleviation and meeting the needs of the agri-food sector. The projects address lecturers of the partner universities to enable them to introduce Problem-Based Learning (PBL) into the existing curricula. Central to Problem-Based Learning as a methodology is that it is student-centred. "Student-centered" refers to learning opportunities that are relevant to the students, the goals of which are at least partly determined by the students themselves which increases the motivation to learn. Further the lecturers are trained in conveying teamwork and problem-solving skills necessary for PBL. Through the improvement of the didactical skills of the academic staff the students will have better skills in problem solving and interdisciplinary research. However, the cooperation between the universities also offers a basis for North-South and South-South academic partnership networks for continuous development of the food-chain management concept in general and its adaptation to African and Asian realities. Collaboration with stakeholders in the agri-food sector of the partner countries should ultimately enable these actors to develop sustainable partnerships and networks in coordinated value chains. To achieve the objectives several inter-related activities are implemented: - Module development: Modules will be jointly developed - Lecturer Exchange to support human resources: It allows additional training, guest lectures and joint development of research project proposals. - Summer schools: Lecturers are being trained in value chain analysis, PBL and team work techniques in annual summer schools. - University-Food Sector Network: Student research projects, internships and a mentoring programme are implemented, supported by network coordination desks. The experiences of the two projects will be analysed and selected results presented.

Sm05.011

Learning to Teach Learning - Towards a Concept for the Training of Lecturers in Conducting Problem - Based Learning Study Projects in Asia

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Adopting a Problem-Based-Learning (PBL) approach in academic study programmes usually comes with a shift towards a focus on learning processes and towards competencies students need for their future professional life. In an effort to respond to demands on graduates seeking jobs in a rapidly changing horticultural and food sector, PBL study projects are being introduced in universities at China, Indonesia and Vietnam within the joint Asian-European project DOCUMAP. Among the skills students should train in these study projects are - centrally - the ability to learn, apply their knowledge, and then reflect on the process that has lead

to the research results. Learning how to learn enables students to acquire new knowledge and skills throughout their lives, responding to the needs of ever-changing work environments. In order to conduct such PBL study projects teaching faculty must change their role from being a lecturer of a subject towards an enabler of learning. This means being able to choose problems suitable to the learning objectives, training students in PBL, team work and communication skills, observe learning processes within groups, guide students' problem analysis and empirical research as well as facilitate reflection processes that enable learning on different levels. Teaching faculty at the Asian partner universities have not been prepared for this role so far. Faced by large numbers of students in most courses, partners in Vietnam and Indonesia see a need to train especially young staff in conducting PBL study projects. This article summarises the PBL-based approach used within DOCUMAP for student research projects in the field of horticultural education. Furthermore it introduces a concept for the training of staff in conducting such projects with the aim to enable student learning. First experiences in implementing the trainings are shared and discussed as well as conclusions drawn for further improvement of the concept.

Sm05.012

Beyond Lectures and Exercises - Establishing Mentorship to Complement Professional Development of Students in Asian Horticultural and Agricultural Study Programmes

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Within the joint Asian-European project DOCUMAP an integrated concept for multiple cooperation of three Asian universities with the horticultural and agricultural sector is being introduced in academic study programmes, in an effort to respond to demands on graduates seeking jobs in a rapidly changing horticultural and food sector in China, Indonesia and Vietnam. Establishing mentoring programmes at the Asian partner universities forms an integral part of this initiative. It aims at answering orientation needs of students that go beyond the learning of facts and theories through lectures and exercises. Along with the emergence of diversified horticultural and food industries a strong need of Asian students arises for counselling and feedback as they attempt to construct and follow their personal career paths. Formal mentoring programmes have been guiding such processes in many countries and across various disciplines and sectors, especially in developed countries. At universities in Indonesia, China and Vietnam, though, mentorship has not been a well-known concept so far and no formal student mentoring programmes are known to the authors. This article documents approaches, progress and difficulties experienced during establishment of mentoring programmes at the Asian partner universities. Based on stakeholder interviews before and after the first mentorship periods it is analysed how the specific conditions at developing country universities within an Asian cultural setting shape the programme set-up, the recruitment of mentors from industry and the mentorship process. This is discussed with the relevant literature and experiences from Germany. Finally, it is attempted to conclude on strategies and factors of success for the establishment of mentorship at Asian universities.

Sm05.013

Horticultural Education and Training Futures in Australia and New Zealand

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In the last 25 years there has been a significant decline in student numbers, course titles and descriptions of horticulture offered as an applied science or horticultural

tural science in Australia and New Zealand. Of the 47 recognized universities in Australia and New Zealand less than 10 percent offer horticulture as a standalone degree program, and less than 20 percent offer horticulture as either a major, a core discipline area, or as an individual subject. The objective of the study was to explore the opportunities for horticultural education, training and career futures in Australia and New Zealand. Over 2008-09 a survey questionnaire was conducted in association with 20 Universities, both in Australia and New Zealand, that conduct agricultural/horticultural/environmental science programs. Response rate was 85 percent. Results show that horticulture continues to become marginalized within academia and universities at the Australasian higher education institutional sector with these trends less apparent in the vocational education and training sector. Recommendations have been suggested on initiatives aimed to revitalize and restore both student numbers and industry interest, promote horticulture and/or science, investigate initiatives that improve delivery of applied science and horticultural science programming (specializations, dual degrees, industry-based degrees), as well as improve on the traditional methods of learning (e-learning, web-based systems). The future of horticultural education in Australia and New Zealand is assured provided we look to meeting industry requirements, improve the image of horticulture as a profession, remain relevant in a changing world, and initiate leadership programs in horticultural research, teaching and extension.

Sm05.014

Development of Vocational Training Programmes with Active Links to Current Research

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During the last two decades, in the UK and other parts of Europe, there has been a decline in numbers participating in recognised qualifications in horticultural crop production. Annually; less than 0.1% of the UK workforce participate in the main UK horticultural training programme (the National Vocational Qualification). In the meantime the demand for suitably qualified staff has increased and become a limiting factor in business development. Historically horticultural qualifications have focussed on practical skills, but the modern industry uses a range of technologies that do not easily conform to standardised assessment procedures. Consequently the requirement is now for a greater emphasis on underpinning knowledge along with a clear understanding of the impact of new technologies and environmental issues on horticultural operations. To support this there are a wide range of technical training resources and many are linked to continuing professional development (CPD) and assurance schemes; but, until now, very few have been integrated into formalised training programmes for recognised qualifications. As well as providing learning on the fundamental principles of crop production, a modern training programme could act as a mechanism for technology transfer and, through the use of interactive assignments, provide an opportunity for intelligence gathering that can benefit research activities. This presentation describes a unique collaboration in the UK between Reading University, The Horticultural Trades Association and the Horticultural Development Company that is developing a new generation of vocational qualifications designed to integrate with the latest research outcomes and also facilitate feedback from the industry to the research community.

Sm05.015

Increasing the Impact of Industry Training Investments in the Horticulture Industry. A High Impact Learning Model for Industry Training

Van der Werff, H. S.

similar questionnaire again. The results of the open-ended questions revealed that similar to children in other Western countries, Finnish children may also be in danger of losing their direct contact with the natural environment. The children from Helsinki reported in the research that they did not play much in nature. It was more common to pass free time in organized sports (boys), or by just walking and talking with friends (girls). The results suggest that it is essential to research further the children's own experiences, if we are to understand, and to enhance, the crucial role of the green environment in their lives. Horticultural interventions can be effective starting points to add to children's knowledge, affection and interest towards greenery, but it is highly recommended that they take place outdoors.

Sm05.018

Audit of Assessment in the Degree Programme Horticulture, Landscape and Sportsturf Management

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The degree in Horticulture, Landscape and Sportsturf Management was selected by the School of Biology and Environmental Science for inclusion in an assessment project undertaken in the academic year 2007 - 2008 by the Teaching and Learning Committee of the UCD College of Life Sciences. The objectives of this four year degree programme are, an appreciation of the importance of plants for human existence, knowledge of the growth, development and protection of plants and use of plants for food, leisure, sports, social and environmental benefits, an understanding of horticultural plant production systems and how their components are integrated and managed in an environmentally friendly and sustainable manner. Using an assessment audit tool developed by the Centre of Bioscience at the UK Higher Education, Horticulture staff assessed the degree programme. Learning aims were explicit for the programme and were reflected in its assessment using various types - seminar, preliminary exams, final exams, projects, field trip reports, MCQ's, laboratory practices, design project, management plan, and problem based learning. Of 15 Horticulture modules, the breakdown of different forms of assessment was written examinations 40.66%; class tests 18%; field visits 7.3%; continuous assessment 14.6% and projects 19.33%. Marking criteria are explicit for PBL based modules presentations but less so for other modules. Criteria are known to staff and students involved. Some feedback is provided for all in course assessments. Assessment overload is an issue which is poorly addressed and requires attention. Following from the outcome of the assessment audit an action plan was developed. The proposed actions are to more closely match the programme aims and module aims with types of assessment; develop assessment of programme at the end of each stage; review existing assessment strategies including the provision of feedback on coursework.

Sm05.019

Application of Knowledge on Selected Species of Medicinal Plants in the Extra-Curricular Activities of Students

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In our work we focused on the therapeutic effects and use of selected species of medicinal plants as one option for bringing gained knowledge in extra-curricular activities of pupils in primary schools. The theoretical part of the study was focused on the classification of selected plant species - prunella vulgaris (*Prunella vulgaris* L.), spring pheasant's eye (*Adonis vernalis* L.), yellow gentian (*Gentiana lutea* L.), jointfir (*Ephedra distachya* L.), oregano (*Origanum vulgare* L.), cowslip (*Primula veris* L.), German chamomile (*Matricaria recutita* L.), sage (*Salvia officinalis* L.) and

Siberian ginseng (*Eleutherococcus senticosus* Maxim.). In the practical part, we use a questionnaire to obtain and evaluate the data concerning the knowledge, use of medicinal plants in the sample of respondents - students of high schools and universities. Based on the results, we proposed the content orientation for the groups on medicinal herbs in extra-curricular activities of students.

Sm05.200

Classroom in the Cocoa Block: A New Approach to Disease Management and Extension in Papua New Guinea

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Seventy two percent of the 5.5 million people in Papua New Guinea (PNG) obtain their livelihoods from the agriculture sector. The sustainable generation of income by smallholder farmers is central to food security, poverty alleviation, and access to education and health services. PNG supplies 9% of the world's fine flavour cocoa. More than 80% of the cocoa in PNG is produced by over 150,000 smallholder farming families. However, the 300-400 kg/ha annual harvests are low and cocoa production in PNG has not increased despite the availability and widespread adoption of new genotypes over the past 20 years. In 2005, lack of access to information and the poor adoption of new technologies were identified as the major constraints to improved smallholder productivity. Typically, smallholder farmers invest little time or money in farm management and the current low yields reflect high disease losses (estimated 40% yield loss), due mainly to pod rots and canker (*Phytophthora palmivora*). Recognising the need for change in management practices we developed a series of low, medium and high-input Integrated Pest and Disease Management (IPDM) options tailored to match the particular circumstances or aspirations of individual farmers. Using participatory on-farm research techniques and farmer training to disseminate information and technologies to farmers, we aimed to enhance the adoption of integrated disease management systems suited to smallholders as a key strategy for enhancing incomes. From 2005 to 2009, yields of cocoa on smallholder farms have increased from 533 kg dry beans per ha to 694 kg dry beans per hectare. National production has increased from 42,000 to over 56,000 tonnes. The challenge is to continue extend and sustain improved management across the nation.

Sm05.201

The Beneficial Effects of Vocational Training on Horticultural Work for the Mentally Disabled and Patients with Chronic Psychiatric Disorders

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Based on human rights, the government apparatus needs to provide vocational training to the mentally disadvantaged. This study was conducted on 10 mentally disabled people and 4 with chronic psychiatric disorders over a period of one and a half months, from November 1 to December 14, 2008. The vocational training, ca. 30 hr per week with a total of 180 hr taking place on the farm. The horticultural programs included various propagation, cultural practices on many kinds of gardening plants and their utilization. The effect evaluation was carried out by two social workers and one horticulturist. The average scores in the posttest were higher than those in the pretest in community skills, basic work skills, dealing with authority, and organizational skills after the training program. In community skill test, the average score of the mentally disabled people increased from 2.71 to 3.01 with significant difference. The average score in basic work skill increased from 2.82 to 3.12. The average score of the mentally disabled people increased from 2.95 to 3.32 in dealing with authority, from 3.57 to 3.82 in organizational skills, and from 2.68

to 3.12 in communicative skill; all these increases showed a significant difference. In the qualitative study, the results also showed that the mentally disabled increased their horticultural basic knowledge, openness, socialization, conscientiousness, self-confidence and senses of art, and of achievement. As for the patients with psychiatric disorders, due to limited data, there was no significant difference between the pretest and posttest, however, the qualitative study showed improvement in horticultural basic knowledge, openness, extraversion, social contact and sense of art.

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Law Protected Plants of National Nature Reserve Dreveník (Hornád Basin) in Project Learning

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National nature reserve Dreveník has the area of 101.82 ha with the highest degree of protection. Travertine formation is located at the altitude of 609 m. a. s. l. in the eastern part of Hornád basin in East Slovakia. In the Dreveník area there are around 270 470 species and subspecies of vascular plants. Approximately 60 species are classified as endangered species of Slovakia. Here grow mountain, lowland, forest and steppe species. The plants are of phytogeographical significance, some reach their northern limit of range in this area. To the protected species of the area belong: (*Pulsatilla slavica*), Alpine aster (*Aster alpinus* L.), Carpathian harebell (*Campanula carpatica*), Pontic dragonhead (*Dracocephalum austriacum* L.), Hungarian iris (*Iris aphylla* subsp. *hungarica*), European columbine (*Aquilegia vulgaris*), Snowdrop windflower (*Anemone sylvestris*), Manchurian monk's-hood (*Aconitum variegatum* L.), Turk's cap lily (*Lilium martagon*), St Lucie cherry (*Cerasus mabaleb*), Yellow Monkshood (*Aconitum anthora*), Bladdernut (*Staphylea pinnata*) and Edelweiss (*Leontopodium alpinum*). The aim of project learning is interconnection between school theory and practice, and the upbringing towards independence and responsibility. The pupils in the second primary education stage elaborated a card file of plants and phytogeographical map of range of the protected species.