LIFELONG LEARNING PROGRAMME

International Internship AGORA (I2AGORA)

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Survey and Analysis of the Magic Cube: OUNL case

Deliverable D3.3

WP3. – Internship 2.0- involvement of students in survey, modelling and implementation

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1) I2AGORA MAGIC CUBE

Universities of the 21st Century are expected to reconsider their relationship with both the regional and global economy. Practical placement may act as an important pillar of it, as well as a multifunctional tool for improving the employability of graduates. While flexibility of course delivery and physical/virtual mobility have received quite a lot of attention, leading to widely available good practice cases/guidelines, in contrast much less focus has been directed towards the improvement of flexibility and internationalization of practical placements.

The prime objective of the I2AGORA project is to open up synergic potential between EU projects, focused on this challenging area. Therefore, survey, systematization and synthetisation of previously implemented and running relevant projects will follow a 3x3 dimensional approach - a "Magic Cube" of Virtual Internship Programs involving:

- vertical dimensions - periods of internship in chronological order, (pre-, implementation and post-internship activities)
- horizontal dimensions - pedagogical patterns, technological tools and methodological models, as elements of the "educational" approach,
- layers of actors/stakeholders: students, universities, enterprises and *intermediaries/multipliers*
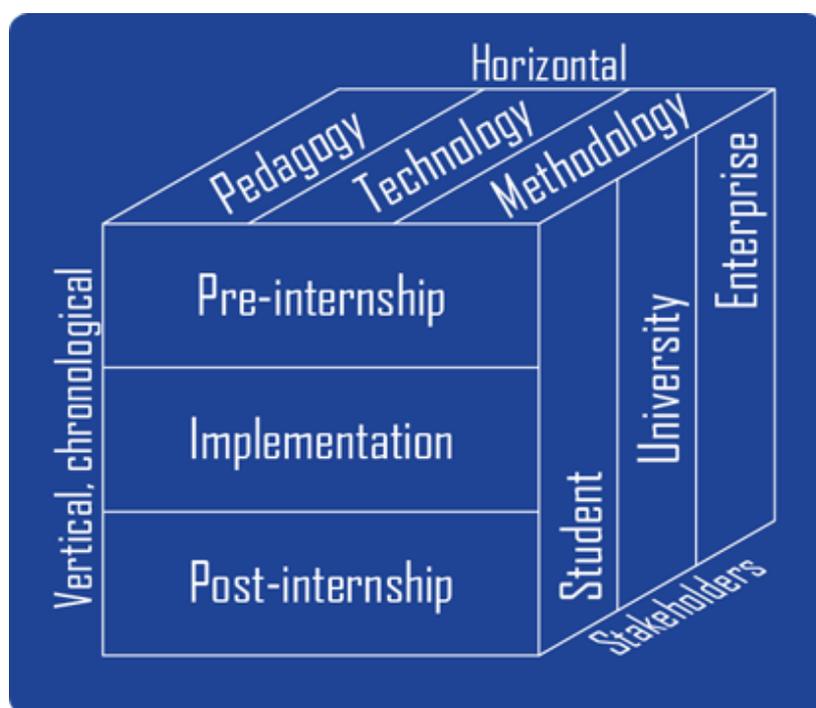

Figure 1. "Magic Cube" of Virtual Internship

2) THE OPEN UNIVERSITY OF THE NETHERLANDS - OUNL

The Open University of the Netherlands (OUNL) together with its Faculty of Natural Sciences, operates within different national and international networks and alliances, developing, providing and promoting distance higher education of top quality. The OUNL is a pioneer in the innovation of Higher Education and aims at the wide-ranging needs of its students, the market and the community at large. The OUNL is an institution that operates successfully in the field of Life Long Learning (LLL) and is a much wanted provider of market-oriented and commercial education. It is a frontrunner in open higher Distance Education (DE) and a leader in educational innovation, also in an international context.

2.1 THE SCHOOL OF SCIENCE

The School of Science of the OUNL is responsible for a BSc and an MSc programme in Environmental Sciences and employs a multi-disciplinary scientific staff. A wide variety of environmental disciplines is represented on the staff, including earth, life, and social sciences. Research at the School of Science addresses complex environmental problems in the context of sustainable development.

The School of Science of the OUNL has gained wide-scale relevant experiences in innovative models of flexible modality placements. One example will be presented here, the Virtual Environmental Consultancy, a virtual student-run company, which executes virtual research and business assignments for both commercial organisations, research institutes and governments.

In order to be able to analyse the different stages of internships and to model the 3x3 Magic Cube in more detail the Virtual Environmental Consultancy was studied.

3) VIRTUAL ENVIRONMENTAL CONSULTANCY

The Virtual Environmental Consultancy (VEC) is an educational module in which learning and work experience have been fully integrated in a distance learning environment. Its didactic design and educational format supports guided individual competence development.
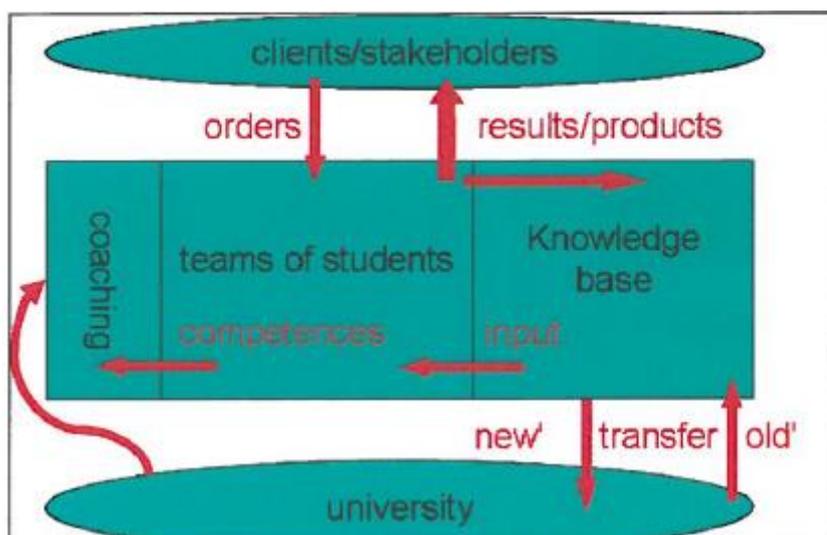
Figure. 2 The module of the Virtual Environmental Consultancy

The VEC (Fig. 2) offers a networked learning environment that resembles an authentic professional situation, in particular the consultancy and advisory business to private and (non)governmental organisations, as one of the major businesses in the professional arena of environmental science graduates. Students and teachers working in the Virtual Environmental Consultancy carry out real projects for real external clients (employers at private and (non)governmental organisations) (see also Table 1). Ivens et al. (2007) describe the module as two parallel processes, one focusing on delivering high quality products to the external clients, the other enhancing the specific competences of individual student employees. In their group internship work, the students are guided by the group itself (computer supported collaborative learning; CSCL), by their project tutor: an environmental science lector at the university, and by the contact person at the employer, who serves as a mentor. In their ability and attitude to learn and to develop competences, the students are coached on an individual level by a tutor at the university and by peer feedback and work reviews by the peer students in the same run of the module (not only team mates) (Table 2).

According to Ivens et al. (2007) the Virtual Environmental Consultancy (VEC) as an educational module in the Bachelor-of-Science programme Environmental Sciences of the OUNL, was developed to give special attention to two main goals of this programme: (1) to equip graduates with the skills to communicate and cooperate with others in the environmental field (2) the ability and attitude to learn 'life long' (Ivens et al., 2007). The VEC educational module was inspired by previous experiences gained at the OUNL with the concept of a 'virtual company' in environmental consultancy and computer science (Westera and Sloep, 1998; Westera et al, 2000).

The VEC is developed as an end of terms integrated research project for Bachelor-ofScience graduation and meets the scientific requirements at that level. Although the VEC was not specifically developed to support learning by doing, in the context of a work experience internship, because of the close contact between the employers' needs and the university within the didactic design, the model is suitable as such a model.

The course is open to 1) students of the discipline/academic programme with minor or major in Environmental Sciences or Sustainable Development; 2) students of the selected disciplines/academic programme Environmental Sciences: majors: Policy, Natural sciences & Health. More over the course is open to all student programmes of other institute/university with a minor or major in Environmental Sciences or Sustainable Development. In earlier runs of the course the run was also offered at the Maastricht University (NI), Twente University and Fontys University. An international version of the VEC is part of the Master on Sustainable Development and Management and described in (Dam-Mieras, van et al. 2007).

Learning objectives are the following:

At the end the student will be able to:

1. to show, in words and by results, which professional competences of environmental scientists the student processes at bachelor graduation
2. to develop a task-oriented and systematic planning approach in working and learning, to be able to develop with guidance the lacking or minor developed individual professional competences of environmental scientists
3. study and address real environmental problems (orders) of external customers, within a team of peer students, and deliver real products.

Table 1 Virtual internship: main characteristics of the Virtual Environmental Consultancy (VEC)

Type of internship (+ internship model)	Virtual Research Internship (aimed at developing scientific skills) • Work assignment from private organization • Work assignment from (non)-governmental organization
part in the curriculum	3rd year bachelor, As part of final bachelor's thesis
credits	Yes, 8,6 or 12,9 or 17,2 credits (ECTS) = study load 240h or 360h or 480h (12 to 16 h/week, During 18 weeks)
didactic model	Virtual Consultancy, real authentic assignments from employers; coached by tutors from the OUNL. Computer supported collaborative learning.

aim	To develop professional competences of environmental scientists on the level of bachelor-of science, within a network learning environment that resembles an authentic professional situation.
learning objectives	At the end of this virtual internship pilot the student will be able to: 1. to show, in words and by results, which professional competences of environmental scientists the student processes at bachelor graduation 2. to develop a task-oriented and systematic planning approach in working and learning, to be able to develop with guidance the lacking or minor developed individual professional competences of environmental scientists 3. study and address real environmental problems (orders) of external customers, within a team of peer students, and deliver real products.
key competences	1. interaction with society, transdisciplinary, participative, knowledge from outside the academic arena 2. innovative thinking, creative, directed to solutions 3. stakeholder (employer) participation
remark on students	3rd year Bachelor of Science, 70% Dutch students/ 30 % (Dutch speaking) Belgian students
electronic environment (ITC communication tools, electronic platform)	The general OUNL Blackboard based "studienet" served as a portal. Daily work and study, as well as contact with tutors, was on the specific Documentum e-room project group ware.

Table 2. Virtual internship didactic feedback, assessment and quality assurance- of the Virtual Environmental Consultancy (VEC)

Feedback / didactic guidance to students, during virtual internship pilot	Feedback on the <u>disciplinary contents</u> of the internship job, is given by: A tutor (at the university), a coach at the client and peerstudents Feedback on <u>'working performance'</u> of the internship student, is given by: A tutor (at the university), a coach at the client and peerstudents Feedback on <u>'learning/reflection'</u> of the internship student, is given by: A tutor (at the university)
Assessment of students, during and after virtual internship pilot	Assessment (grading) on the <u>disciplinary contents</u> of the internship job, is given by: a tutor (at the university) and A coach at the client Assessment (grading) on <u>'working performance'</u> of the internship student, is given by: a tutor (at the university) and coach at the client Assessment (grading) on <u>'learning/reflection'</u> of the internship student, is given by: A tutor (at the university)
Quality assurance	Quality is assured in a protocol and in assessment (grading) instruments at each intermediate and final product (project work plan; personal development plan, intermediate report; (intermediate and final) self-reflection report; final report); cumulative assessment of all products by one final assessor. Overall quality is assured by the QA protocol of the School of Science and the OUNL which ensures the DPCA-cycle.

4) 3X3 MODEL FOR VIRTUAL ENVIRONMENTAL CONSULTANCY

The Virtual Environmental Consultancy is explored as an example of the 3*3 dimensional approach of the "Magic Cube" of Virtual Internship Programs. Therefore, the characteristics of the VEC are modelled according to the 3x3 Magic Cube approach (see Figure 1).

I.VERTICAL DIMENSIONS -PERIODS OF INTERNSHIP IN CHRONOLOGICAL ORDER

The different periods of internship in chronological order can be distinguished:

- pre-internship activities
  - well-defined authentic assignments have to be obtained
  - Student intake with the BSc coordinator
    - Application forms
    - pre-knowledge required 1) students of the discipline/academic programme with minor or major in Environmental Sciences or Sustainable Development; 2) students of the selected disciplines/academic programme Environmental Sciences: majors: Policy, Natural sciences & Health. More over the course is open to all student programmes of other institute/university with a minor or major in Environmental Sciences or Sustainable Development.
- during internship activities
  - Internship work
    Students work on their projects and are guided by the group itself (computer supported collaborative learning; CSCL), by their project tutor: an environmental science lector at the university, and by the contact person at the employer, who serves as a mentor.
- post-internship activities
  - Quality assessment: Quality is assured in a protocol and in assessment (grading) instruments at each intermediate and final product (project work plan; personal development plan, intermediate report; (intermediate and final) self-reflection report; final report); cumulative assessment of all products by one final assessor.
  - Overall quality is assured by the QA protocol of the School of Science and the OUNL which ensures the DPCA-cycle.

II HORIZONTAL DIMENSIONS - LEARNING IN THE VEC

The VEC offers a networked learning environment that resembles an authentic professional situation, in particular the consultancy and advisory business to private and (non)governmental organisations, as one of the major businesses in the professional arena of environmental science graduates. In order to optimize the learning process pedagogical patterns, technological tools and methodological models have been developed.

- pedagogical patterns
  - In the VEC there are several guidance & assessment systems
    - Feedback on the disciplinary content is given by the university tutor, a coach at the client and peer-students
    - Feedback on working performance of the students, is given by the university tutor, a coach at the client and peer-students
    - Feedback on learning! reflection of the student is given by a university tutor
  - The client are asked to be present ant the final thesis presentation
- Several technological tools (ICT communication tools, electronic platform) are used in the VEC
  - The general OUNL Blackboard based "studienet" serves as a portal.
  - For daily work and study, as well as contact with tutors, the specific Documentum e-room project group ware is used
  - There is a specific ICT feedback system for students and tutors
- Methodological models
  - The virtual research internship aimed in the VEC aims at developing scientific skills; competence based and collaborative learning are at the basis of the VEC
  - Work assignment are for private organization and (non)-governmental organization
  - Grouping: team-work (networked learning)
  - Proximity can be local, regional as well as international

III. LAYERS OF ACTORS/STAKEHOLDERS:

Students, universities, enterprises and intermediaries/multipliers. A very important aspect of the VEC is the knowledge transfer of the different stakeholders (see also Figure 2). Of most importance is good communication for collaborative working and learning.

The actors/ stakeholders all have different prearranged tasks and roles in the different phases, for example:

- Student: student, employer VEC, give feedback on peer students, give feedback on the course, etcetera
- Universities: educational design, tutor, give feedback on learning and reflection, contact with the clients, etcetera
- Clients: make assignments, provide data, mentor, give feedback, examiner, quality assurance, etcetera

5. INPUT FOR I2AGORA

The outcomes of D3.3

1. were presented at the Employability Cliniques. Attention was given to both experiences and knowledge of the different dimensions of virtual internships and to present models of local adoption.
2. Used as for input of WP5

AD. 1 THE EMPLOYABILITY CLINIQUES OF THE 12AGORA PROJECT

Each Clinique had an (open) stakeholder invitee network originating from HE institutions, enterprises, professional organisations, chambers of commerce, social partners, and local/regional/national bodies, as well as influential European networks:

EADL, EDEN, EADTU, EFMD, EFQUEL, EUG, ESU, EUCEN, EuroPACE, MENON, EUA, and Coimbra.

The results were presented at different sessions at different location (see for more detail Dissemination D7)

1) University-business cooperation: sharing institutional experiences and sustainable ways of cooperation
   University - business cooperation: the virtual consultancy.

Flexible modality internships: best-, good- and emerging-practices (the floor to European demonstrations - other projects and running Internship 2.0 examples)

University - business cooperation: the different dimensions in virtual internships

AD 2. INPUT FOR WPS

The outcomes were used as input for the design of the Questionnaire of the analytical survey for WP5 (see report WP 5).

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