Rethinking higher education in the food chain and environment: Profiling graduates for the future

Edited by
Brian Dennis

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Per Holten-Andersen

Rector
The Royal Veterinary and Agricultural University (KVL), Copenhagen, Denmark

It is my pleasure on behalf of the Royal Veterinary and Agricultural University (KVL) to welcome the 7th European Conference on Higher Agricultural Education here to Copenhagen. The theme you have chosen – "Rethinking higher education in the food chain and environment" – is extremely relevant, and describes a process that we are very actively engaged in here at KVL.

I would like to give you a very brief introduction to KVL and then to give you some idea of the shape of the rethinking process here at this university.

KVL currently has 3535 students enrolled of which 390 are Ph.D. students. It employs a staff of 1750 and has an annual turnover of 1.15 mill. Dkr. The university was founded in 1858 on the basis of the much older School of Veterinary Science which was set up in 1773. Initially KVL offered degree programmes related to basic food production, i.e. Agriculture, Horticulture, Forestry and later Dairy Science. Moving out from this nucleus of primary production, the diversification trend at KVL mirrored that seen in other universities. The diversification process started in the 60's with Landscape Architecture followed by Food Science. This process continued through the 1990s and into the present century, where the most recent additions have been Environmental and Natural Resources and Clinical Nutrition.

Table 1: BSc and MSc degrees at KVL.

Degree programme	***Established***
Veterinary Medicine	1773
Agricultural Science	1858
Horticultural Science	1863
Forestry	1863
Dairy Science	1921
Landscape Architecture	1960
Food Science	1971
Agricultural Economics	1992
Environmental Chemistry	1995
Human Nutrition	1996
Landscape Management	2000
Biology – Biotechnology	2002
Parasitology	2002
Agricultural Development	2002
Environmental and Natural Resource Economics	2003
Clinical Nutrition	2004

The number of students entering KVL for degree programmes in the traditional disciplines of agricultural sciences and related programmes also mirrors the declining trend seen across Western Europe (figure 1). This decline in student numbers has prompted the theme for this conference, as there is an obvious need for universities and faculties specialising in agriculture and related sciences to "rethink" their programmes.

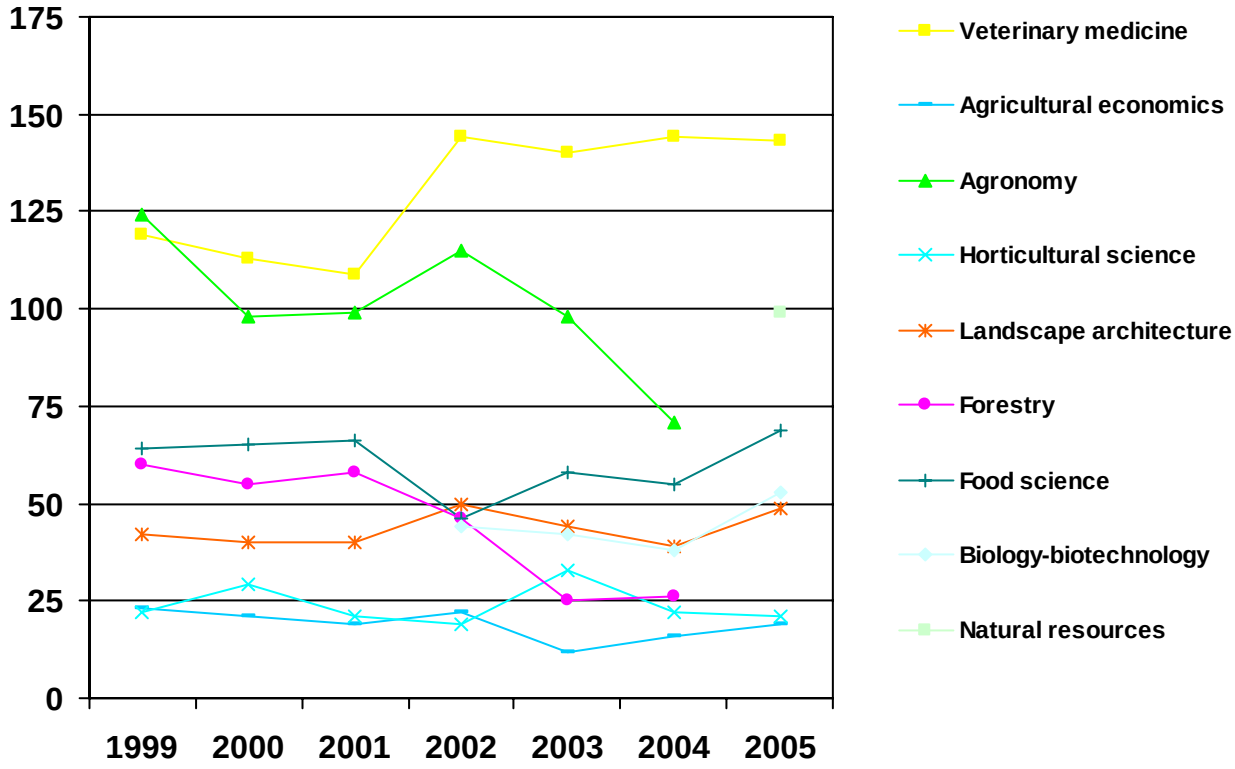

Figure 1: Student uptake 1999-2005 by degree programme.

KVL has done a lot of "rethinking" in recent years, and I will highlight here just a few of the initiatives we are working with.

- The Full House project
- Educational reform 2005
- Emphasis on internationalisation
- Cross-institutional collaboration
- Quality assurance

The Full House project was set up in 1993 and encompasses a number of initiatives to attract more students to KVL's degree programmes. Initiatives comprise public relations materials, educational materials for teachers, hand-on practical classes for high school students, participation in cultural events and exhibitions, etc. The goal is to attract more students – and the right students!

KVL's educational reform 2005 is a very comprehensive rethinking and restructuring of our degree programmes and their contents. The reform covers

- Reduction in the number of BSc programmes as basis for more differentiated MSc programmes
- Close contact to society
- New teaching methods, such as problem-based learning
- Greater flexibility, more rapid response to change

Work on formulation of new BSc degree programmes currently occupies much of our time, and involves - amongst other things – careful consideration of which competencies students are likely to require in their future careers. The balance between generic and subject-specific competences, which is one of the themes of the conference, is therefore of prime interest for KVL and we will be following these discussions closely.

Internationalisation: KVL has a long history of international involvement, primarily through its research activities, but in recent years also in the field of education. Prior to 1995, the approach to internationalisation was fragmented, and relied on dedicated individuals at sub-department level. This has since been supplemented with an institutional approach and an institutional commitment to internationalisation.

KVL's strategy for internationalisation 2000-2004 describes policy and goals, and covers research, education, international cooperation, management mechanisms and organisation. A central theme has been internationalisation as a means of increasing the competences of our graduates and ensuring a high quality. We have placed emphasis on:

- Quality, topicality and international dimension, intercultural competencies
- A competitive university preparing candidates for the global job market
- Securing and expansion of areas of expertise – sharing of competencies
- Global responsibility, capacity building
- A possible source of income

Cross-institutional collaboration is seen as a means of exploiting opportunities for the development of specialised courses, of managing change in degree programmes in response to the requirements of society, and as a means of quality development. Some examples of the kind of cross-institutional collaboration KVL is engaged in are:

- International collaboration, for example: Euro League for Life Sciences (ELLS), NOVA University, bilateral collaboration – Europe, US, Australia, NZ
- National collaboration with other Danish universities, sector research institutions and the setting up of consortia such as Centre for Advanced Food Studies (LMC), Plant Biotech Denmark (PBD) and Team Horticulture.

Quality assurance has a very high priority at KVL. The competition in terms of student recruitment will be strong and international, and only the best will survive. KVL's goal is therefore degree programmes of the highest quality, and much effort is put into developing quality assurance.

Within recent years KVL has participated in a number of international evaluations, for example, an EAEVE review of Veterinary Science in 2001 and a comparative study of BSc programmes in Agricultural Sciences at four European agricultural universities conducted by EVA in 2002. In 2003 KVL underwent an external evaluation of its strategy for internationalisation and internationalisation process, carried out in the aegis of AFANet/IROICA. This review has proved a valuable instrument in promoting our internationalisation process.

The Conference circular poses the question *Does society and industry need higher education institutions to educate students in the disciplines of agricultural sciences and management?* If the answer is to be yes, degree programmes offered need to be re-considered in the light of the competences that best equip our graduates for their future careers. This process is well-underway at KVL but there are undoubtedly many more initiatives we can take. In this context the programme for this conference is particularly relevant.

We have participated in several of the previous ECHAE meetings, and have found them useful and inspiring. We hope that this conference will provide a similar platform for discussing innovative approaches and developing new ideas.

I welcome you once again to KVL, and hope that you enjoy a profitable three days here in Copenhagen.

Redefining the expected competences of graduates, lessons learned from the Tuning Project

Paul D. Ryan

Department of Earth and Ocean Sciences, National University of Ireland, Galway, Ireland

paul.ryan@nuigalway.ie

Abstract

The Bologna Declaration of 1999 followed by the Prague and Berlin Communiqués requires that higher education throughout Europe be 'harmonised' to meet the needs of the marketplace. This involves the implementation of a 2 cycle, five year structure to produce both Bachelors and Masters Degrees. Degree transcripts must be easily readable and comparable. The Tuning Project is the Universities' response to these challenges involving academics from 9 disciplines and 130 European universities who have worked over the past four years to develop strategies towards implementing these directives whilst ensuring diversity and autonomy. Tuning has developed an approach for describing degrees in terms of competences and learning outcomes (the output) rather than syllabi (the input). This paper reviews Tuning's work on identifying relevant generic and subject specific competences for the pilot subject areas, quantifying them in terms of ECTS, and in developing a new methodology for designing and describing courses in a manner compatible with the Bologna Process.

The Bologna Declaration of 1999, followed by the Prague and Berlin Communiqués has initiated a revolution in Higher Education within Europe. All Universities are now to initiate a 2 cycle degree structure over five years to produce both Bachelors and Masters Graduates relevant to the workplace whose degree transcripts must be easily readable and comparable. To quote the Berlin Communiqué of *2003 "Ministers encourage the member States to elaborate a framework of comparable and compatible qualifications for their higher education systems, which should seek to describe qualifications in terms of workload, level, learning outcomes, competences and profile. They also undertake to elaborate an overarching framework of qualifications for the Higher Education Area"*. These concepts of learning outcomes and competences have been developed during the European Commission sponsored project 'Tuning Higher Educational Structures in Europe' (Tuning). This project (González and Wagenaar, 2003) was the Universities' response to the Bologna Declaration and its aim is defined in its motto "*Tuning of educational structures and programmes on the basis of diversity and autonomy"*. The last phrase is particularly important as it emphasizes that it is not Tuning's intent to enforce regimentation (not that it has, nor would wish the authority to do that), but to help harmonize higher educational practices throughout Europe and to promote the European Higher Education Area (EHEA).

Tuning has worked by establishing subject area groups comprising academics from different countries who have met both in closed and plenary session to investigate methods of implementing the Bologna Declaration before the deadline of 2010. Tuning is the only project involving individual universities and individual academics that is dealing with this task. It is remarkable how little public debate there has been to date about this process, which has profound implications for academic life at all levels. The Tuning project has carried out its work by investigating five 'lines of study': generic competences; specific competences; ECTS as an accreditation and accumulation system; methods of teaching and learning; and quality enhancement. The first three lines are relevant to this article and the results will be discussed below.

1 Competences and Learning Outcomes

In an effort to try to quantify first and second cycle degrees in an '*easily readable and comparable'* manner it was quickly realized by Tuning that such descriptions should be in terms of learning outcome and competences, rather than in terms of syllabus. In other words we readily agreed on what we wanted to come out, but had many different opinions on what needed to go in. Competences are defined as '*a dynamic combination of attributes, abilities and attitudes obtained by the student'*. They are formed in various course units and assessed at different stages and may be either subject specific (e.g. a basic knowledge of soil types and structure) or generic (e.g. the ability to work in a team). Learning outcomes *are formulated by academic staff* and are *'statements of what a learner is expected to know, understand and/or be able to demonstrate after completion of learning'*. They can refer to a single course unit or module or else to a period of studies, for example, a first or a second cycle programme. Learning outcomes specify the requirements for award of credit and should be formulated in terms of competences. Learning outcomes, according to Tuning methodology, should be formulated in terms of competences. Competences may be developed to a greater degree than the level required by the learning outcome, allowing for different levels of student achievement. A simple illustration of the syllabus, competence and learning outcome description of a course is given in Table 1.

Table 1: Illustration of the concepts of competences and learning outcomes versus the more traditional syllabus description of a course.

Syllabus (N.B. whilst the first lectures will be similar in all countries, the contents of the later lectures or exercises will vary – e.g. driving skills on ice)	Design of automobile (optional) Automobile control systems Automobile signal systems Basic automobile maintenance (optional) Map Reading and local geography (optional) Road Signage, Law and the road user Road Safety Consideration for other road users A series of practical exercises maneuvering an automobile around the public highway.
Competences *this is an essential generic competence which is not specifically covered in the syllabus, but without which The outcome will not be achieved.	Safe driving skills The ability to navigate Consideration for other road users *Ability to accept and respond to instructions whilst Driving
Learning Outcome	Driving License

It was decided to focus on competences because they allow further transparency of professional profiles in study programmes and emphasize learning outcomes. Competences encourage a shift to a more learner oriented approach to education. In the example above it is not enough to have attended all lectures and practical exercises to have gained the competence. The growing demands of a lifelong learning society require more flexibility in our programmes. The need for higher levels of employability and citizenship mean that graduates are expected to have acquired generic competences that may not be explicit in a traditional syllabus. This approach was found to enhance the European dimension of Higher Education and also to act as a shared language for consultation with all stakeholders.

2 Generic Competences

To investigate the generic competences that were required by the market and to what extent existing higher educational programmes actually taught them, Tuning 1 (the first phase) conducted a survey of recent graduates (1991-2001), employers and academics. Respondents were asked to rank 30 generic competences (outside of a specific subject area) in terms of their importance for employability and as to what degree they were thought to have been acquired. Seven subject areas were targeted (Business, Geology, History, Mathematics, Physics, Education and Chemistry) from sixteen countries (Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Netherlands, Norway, Portugal, Spain, Sweden, and the United Kingdom). 5183 graduates, 944 employers and 998 academics replied. Generic competences were divided into three groups: instrumental; interpersonal; and systemic (Table 2).

Table 2: The list of generic competences, grouped by category, used in the Tuning 1 survey

Instrumental	***Interpersonal***	***Systemic***
Capacity for analyses and synthesis	Critical and self-critical abilities	Capacity for applying knowledge in practice
Capacity for organisation and planning	Teamwork	Research skills
Basic general knowledge	Interpersonal skills	Capacity to learn
Grounding in basic knowledge of the profession	Ability to work in an interdisciplinary team	Capacity to adapt to new situations
Oral and written communication in your native language	Ability to communicate with experts in other fields	Capacity for generating new ideas (creativity)
Knowledge of a second language	Appreciation of diversity and multi-culturality	Leadership
Elementary computing skills	Ability to work in an international context	Understanding of cultures and customs of other countries
Information management skills (ability to retrieve and analyse information from different sources)	Ethical commitment	Ability to work autonomously
Problem solving		Project design and management
Decision-making		Initiative and entrepreneur spirit
		Concern for quality
		Will to succeed

The data collection was conducted locally by individual academics and, therefore, the quality control was variable. Also, there was no correction for sampling problems. For example, it is possible that industry's response was dominated by SMEs as the reply from a one person consultancy was given the same weight as that from a multi-national corporation. The results of the survey should, therefore, be treated as

qualitative not quantitative. Table 3 shows the ten generic competences in rank order that were found to be the most highly valued and Table 4 the three lowest ranked competences.

Whilst the highest ranked competences are those we hope to develop within the higher education system, it is a matter of some concern that the interpersonal competences, particularly those relevant to a European dimension were poorly ranked.

Table 3: The ten highest ranked generic competences in the Tuning 1 survey

Rank Order	***Competence***
Highest	Capacity for analysis and synthesis
	Capacity to learn
	Problem solving
	Capacity for applying knowledge in practice
	Capacity to adapt to new situations
	Concern for quality
	Information management skills
	Ability to work autonomously
	Teamwork
Less high	Capacity for organization and planning

Table 4: The three lowest ranked generic competences in the Tuning 1 survey

Rank Order	***Competence***
Low	Ability to work in an international context
	Appreciation of diversity and multi-culturality
Lowest	Understanding of cultures and customs of other countries

There were some differences between different countries and between the various groups. Table 5 shows those competences that correlated well in their rank from country to country, other competences showed no significant correlation. Table 6 shows the top ranked competences for each group. The high rank of 'capacity to learn' and 'capacity to apply knowledge in practice' in all three samples is encouraging.

Table 5: Generic competences whose ranks correlate between countries in the Tuning 1 survey

Correlate well between countries
Knowledge of a second language
Ability to work autonomously
Will to succeed
Capacity for applying knowledge in practice
Concern for quality
Initiative and entrepreneurial spirit
Ability to work in an interdisciplinary team

It is important to note than in Tuning 2 more professionally oriented groups were included such as Nursing, who also conducted surveys. Although different generic competences were listed, their results differed significantly from the Tuning 1 survey in that interpersonal competences were ranked highly.

The main lessons to be learned from the various Tuning surveys are: firstly, that stakeholders value many generic competences that are not defined in our syllabi, but hitherto assumed to be implicitly gained by the student during their study; and secondly, that when designing or revising curricula it is important to consult stakeholders and not just rely on the needs of the academics and the results of questionnaires completed by students.

Table 6: The top 6 generic competences for each sample group in the Tuning 1 survey

Graduates	***Employers***	***Academics***
Capacity for analysis and synthesis	Capacity to learn	Basic knowledge of the field of study
Capacity to learn	Capacity for applying knowledge in practice	Capacity for analysis and synthesis
Capacity for applying knowledge in practice	Capacity for analysis and synthesis	Capacity to learn
Elementary computing skills	Capacity to adapt to new situations	Capacity for generating new ideas (creativity)
Capacity to adapt to new situations	Interpersonal skills	Capacity for applying knowledge in practice

3 Subject Specific Competences

The lists of subject specific competences were developed within the subject area groups in the form of benchmarking statements and accompanying sets of level descriptors which defined those competences that were expected at the end of Cycle 1 and, or Cycle 2. Some groups such as Mathematics found they were able to be more specific than others such as History or Earth Science. Eventually, all groups adopted very flexible statements that typically defined the discipline in terms of essential core competences and those which it is desirable to have acquired some knowledge of. It was not the job of Tuning to define these benchmarks, rather to demonstrate that this could be done in a European context. This task should be completed by the subject specific Thematic Networks. These definitions will allow all stakeholders to see how a given degree at a given institute satisfies these European benchmarks.

An example of how far this model can be developed is the Euro bachelors in Chemistry that has recently been devised by the Tuning Chemistry Subject Area Group and the European Chemistry Thematic Network (ECTN). A flexible standard is defined which allows for the autonomy of institutes and is regulated by the quality control process. Conformity to this standard will allow an institute to award this qualification along with their own thus making their graduates more mobile within (and outside of) Europe. More details of this development can be gained from the ECTN web site (www.cpe.fr/ectn).

4 ECTS as an accumulation and accreditation system

It is not enough to define a degree in terms of learning outcomes comprising generic and specific competences. The importance of these must be quantified in terms of ECTS. This means that one must

have the debate about how much of a given programme should be given over to subject specific competences for a person to be considered a graduate in that subject. Tuning agreed with the model that a Cycle 1 degree (Bachelors) should comprise three or four years study leading to the award of 180 or 240 ECTS. A student gains 60 ECTS for each year passed. There was more debate about the number of ECTS that are required for the award of a Cycle 2 degree (Masters). Generally it was felt that one undergraduate year of 60 ECTS in addition to the Bachelors was not enough and that 90 to 120 Cycle 2 ECTS were required. However, there is still considerable debate about whether an intensive one year programme merits the award of 90 ECTS, or whether the minimum length of a Cycle 2 degree should be perhaps 15 months.

The concept of ECTS has developed from that which we used for the accreditation of visiting students. It is now seen as a system of accumulation. To gain a degree a student needs not just a total of 180 or 240 ECTS, but they must have the right combination of ECTS at various levels. It is not possible to take and pass first year courses over three or four years and then claim a degree. In addition, the ECTS awarded must reflect student involvement. This is a paramount consideration for mobility and transparency. If this is not done, then it is possible to have two degrees with identical syllabi, where one requires half of the student involvement of the other. ECTS are currently calculated on two models, or some combination thereof. Firstly, the total number of course credits for a year is divided by 60 and then this factor is multiplied by the credits for each module to gain the ECTS for that module. This method may measure staff involvement, but rarely measures student involvement. Such calculations are often obvious in a syllabus that awards ECTS to three significant figures for a given module. Tuning recommends that ECTS should be awarded in blocks of 5 or preferably 10 per module. Tuning also recommends that student workload should be taken into account. There is no standard method for doing this. The second method is to take the average workload for a student as approximately 1500 hours and divide it by 60 to calculate 25 hours of total student experience equals 1 ECTS. Some academics think this is too simplistic and would stifle academic initiative on the part of the student, others point out that this system works perfectly well in their country and is completely transparent. It should be emphasized that total student experience is not the same as contact hours. Total student experience includes all of the time a student must spend to gain the ECTS which includes: registration; attendance at formal courses; directed reading; free study; revision; examination; project work; attendance of conferences, seminars and workshops; site visits; field work etc.

5 The Tuning Method

This emphasis on competences has led to a ‘Tuning Method' or approach for curriculum design. After consulting stakeholders, a set of learning outcomes should be defined for a programme. It is only at this stage that the actual curriculum and teaching/learning methods should be developed and defined in terms of modules which gain ECTS at the appropriate level. This approach is more student centered and makes for a greater transparency of degrees. A human resources manager may not understand the subject competences gained through understanding the finer points of plant pathology, but will clearly comprehend the generic competence ‘completing a task on time’. The individual subject groups found it relatively easy to define the required competences and expected learning outcomes for their discipline. However, it would probably have proved impossible and most undesirable to define a single curriculum for a given subject throughout the EHEA. Europe now expects thematic networks to develop Tuning lines 1 (generic competences) and 2 (subject specific competences) in their work programmes and access to the Tuning literature and academics who have participated in Tuning will prove a considerable resource for completing this task.

6 Conclusions

In order to make European degrees easily readable and transparent, the Tuning Project recommends that they be formulated in terms of generic and specific competences rather than syllabi. In the past many courses have assume that the student will acquire generic competences through the study of a given syllabus. Courses are still routinely defined in terms of what the student will study, rather than what they will achieve in terms of learning outcomes. When designing or revising a degree programme it is recommended that the stakeholders are first consulted, the necessary subject specific and generic competences defined and used to construct a set of required learning outcomes. Syllabus design, teaching methodology and accreditation schemes using ECTS should only be undertaken at this stage. It is worth noting that some generic competences may best be taught outside departments. Library skills, safety or personal development courses are often most successful when taught to a mixed group rather than a class that is already very familiar with each other and their academic instructors. This means that the Universities must also take ownership of this process: it is not enough for them to devolve responsibility to individual departments. Formal inclusion of training to gain such generic competences may prove attractive to prospective students.

References

González, J and Wagenaar, R. (Editors) 2003. Tuning Educational Structures in Europe: Final Report, Pilot Project – Phase 1. University of Deusto and University of Groningen, 316pp. Available from http://www.relint.deusto.es/TuningProject/index.htm or http://www.let.rug.nl/TuningProject/index.htm

Suggestions for further reading

A useful summary of Tuning Phase 1 and Phase 2 is provided on the Europa website: http://europa.eu.int/comm/education/policies/educ/tuning/tuning_en.html

More details concerning the Bologna Process can be found at the Bologna Process website: http://www.bologna-berlin2003.de and Council of Europe website http://www.coe.int.

A list of the some 130 subject area panel members and their host institutions for Phase 1 can be found in González and Wagenaar (2003). The list for Phase 2 had not been posted on the Tuning websites at the time of writing; however, they will become available under the appropriate link.

Cultivating social responsibility in graduates: a challenge for curricula in higher education

Bill Slee

Countryside and Community Research Unit, University of Gloucestershire, Cheltenham, UK

bslee@glos.ac.uk

Abstract

This paper explores the context in which social responsibility is inculcated in graduates in land-based sciences, arguing that the consensually agreed productivist ethic of the post-war period has broken down and been replaced with a much more contested and pluralist 'post-productivist' view of the subject area as a whole and the ethical responsibilities needed in the educational system for land-based sciences. As the boundaries of the subject area have been broadened, so new concerns about the environmental impacts of land use can be readily accommodated in a 'land-use as applied ecology' model. However, there has also been a breakdown in the adoption of a unitary epistemology within the land-based sciences, with positivism being challenged by reflexive modes of analysis within the social sciences. Those involved in education in the land-based sciences need to recognise the epistemological shifts as well as the values embedded within their existing practices and ensure that the social, ethical and environmental consequences of their teaching are explicit. It remains uncertain as to whether the issue of social responsibility is best embedded in mainstream teaching or whether free-standing courses should be adopted to deal with subjects such as agricultural ethics. What is certain that the application of bio-physical and economic science is not value neutral and it is incumbent on those who seek to reconnect consumers and the land-based industry in a post-productivist world to reflect on the values that are implicit or explicit in their work and give students exposure to debates about these values.

1 Introduction

In this paper I want to explore the ways in which social responsibility have been approached in higher education in both the land-based sciences (agriculture, forestry and wildlife management) and in agro-food studies (the subjects dealing with the social and biophysical aspects of food production processing and retailing) though the emphasis will be on the former. I will argue that an earlier unwritten accord existed which promoted the productivist mission in the agro-food complex in Europe, was endorsed by the general public and, further, was often protected by the town and country planning system. This has been subjected to a profound challenge, which has created difficulties for those involved in teaching and curriculum design in agriculture forestry and related subjects. Confronted by dissident consumers and public disquiet, the farm community and its educationalists and researchers initially closed ranks and retreated into a productivist bunker. However, as time has gone on, so a more open-minded review process has taken place, which has attempted to accommodate the breakdown of a unitary view of the agricultural 'mission'. Such processes can be seen as an inevitable outcome of a pluralistic (some would say post-modern) society, where in the place of broad unity about the 'mission' there is contestation and challenge.

In the paper, I will review the context of change, exploring vocational sensitivity and the long period of methodological monism that prevailed until the last decade and a half, review the current challenge to inculcate what we might term 'social responsibility', explore its consequences and look at the ways in which the boundaries of the subject have been extended. I will then offer some summative statements about a possible way forward.

For the last decade, the dominant political discourse in Europe about agriculture, forestry and food has been undergoing rapid change. This and wider changes in the nature of politics in a rapidly globalising post-cold war world is shaping a transformation of the policy context in which agriculture and forestry and more widely rural development, resource management and food production operate. It is incumbent on the educational system to take note of these changes and bring to the fore some of their social and ethical implications.

2 On vocational sensitivity

Historically, education in the land-based sciences has been characterised by a desire to transmit knowledge developed in HE and research institutions to future administrators and practitioners in order to create a more productive sector to better meet societal needs. 'Science' in its various forms can be seen to assist in the range of technical and management processes from field to fork. As is also the case in subjects such as medicine, law or engineering, there is a long history of vocational sensitivity in the education of graduates in these disciplines, although in some of these disciplines there is a clearer demarcation between the development of theoretical understanding and the practical application of knowledge. This vocational sensitivity differentiates these subjects from other disciplines that are less directly connected to particular vocations.

Over the last fifty years, the dominant mission of governments throughout the world and international organisations such as the Food and Agriculture Organisation of the United Nations has been to ensure food security at national and international levels. In some countries such as the UK, this mission has extended to include security of timber supplies. Paradoxically, this mission has often been pursued with greatest zeal in countries that are no longer confronted by food scarcity, but in which farmers are relatively unimportant in their overall contribution to economic activity. Further, in developing countries where food has often been scarce, farmers have been 'taxed' by a mixture of price control and poor governance and corruption, with adverse consequences on the supply of food. Mancur Olsen has explained this paradox in his book, The Logic of Collective Action, by reference to the organisational capacities of smaller numbers to engage in rent seeking behaviour and the (relatively) modest nature of the cost of support.

The net result of state support for farming in developed western countries has been the creation of an educational and educational infrastructure that promotes the development of scientific understanding and the application of science to practice. Over the last 100 to 150 years this has created an enormous body of knowledge. The set up of the agricultural education infrastructure varies somewhat from country to country but essentially contains a bottom tier of knowledge transfer of a rather practical nature, such as is found in craft skills and explicitly vocational training, often targeted at the less able school leaver or the individual who chooses a very practical orientation in his/her education. The next level of education typically involves a greater component of what might be thought of as scientific building blocks, often historically taught as foundation courses and usually followed by courses of a more applied nature. Often above this there is an educational elite in which the scientific component is more advanced, but in which there is still often a significant degree of vocational sensitivity. This would include the range of mainstream agriculture and forestry programmes in both old and newer 'technical' universities.

We should not forget the significance of the productivist regime largely constituted in the aftermath of the Second World War. Global recession in the market economies in the 1930s had caused major problems in the farm sector and raised questions about whether and how the farm sector might be supported. Different countries came to very different views, with the UK adopting a mixed system of empire preference with elements of free trade, whilst most continental European countries adopted a more protectionist stance. In the light of wartime experiences, there was almost universal support for the farm sector in the post war period, in which the state became much more involved through the development of advisory services and research capability. Inevitably, this placed new demands on the educational system.

Given the salience of what is now often termed, with hindsight, a productivist policy regime, the mission of these educational institutions, supported by government, was to create a well-trained cadre of land use professionals. The farm and forest sectors, which had often been viewed as something of an economic backwater in more developed western economies, had their profiles raised as a result of the Second World War, when major shortages threatened national survival. The post war repositioning of agriculture and forestry revitalised the HE sectors in these disciplines and for the 30 years after the war set about an expansion of operations that paralleled the changes taking place on the farm.

The productivist mission has thus constituted the dominant ethos of educational institutions for the last fifty years. Curricula were designed to meet these needs, giving students a sound grounding in the bio-physical sciences, topped up with micro-economics and farm management. Its consequences have been profound. Yields of major crops have risen dramatically; the conversion efficiency of livestock systems has undergone profound changes, partly through the use of better genetic material and partly through better feeding of animals. Productivity per man and per hectare have also increased and the wider components of the post war rural economy were neglected in a ruthless drive for increased efficiency and output.

To most bio-physical scientists in the early post-war period, social responsibility rarely entered their minds, except insofar as a set of political signals and social consensus had underpinned the post-war policy agenda and fed into the educational mission. By the late 20th century doubts were emerging about the modernisation project fed by ecological awareness and a desire to subject growing areas of interest such as organic agriculture to more serious scientific scrutiny.

Those who worked in the education sector relating to land-based sciences in the last fifty years cannot fail to be aware of the extraordinary zeal, enthusiasm and commitment of many of the academic staff to turn science into practice. Underpinning this commitment was a powerful attachment to the farming community and to the enhancement of its wellbeing. The implicit social responsibility of these individuals was to support farmers by providing the technical and financial apparatus to enable the aggregate performance of the sector to be improved.

Over the last decade and a half this productivist vision has been widely challenged. Indeed doubts about this productivist vision surfaced much earlier. Aldo Leopold's Sand County Almanac, published in 1949 had already exposed the failings of transplanting European farming systems into inappropriate conditions in Wisconsin. In the mid-1950s the first signs of the adverse environmental consequences of the agricultural modernisation project were emerging in the work of people like Norman Moore who exposed the impacts of organo-chlorates on wildlife, which received a more public and polemical airing in Rachel Carson's Silent Spring. From the 1970s there was a widening debate about the adverse effects of the agricultural modernisation project principally in terms of the adverse effects of agricultural intensification on landscape and wildlife and water systems.

A second strand to the emergent critique has been the observation that the protectionist farm policies, which were part of the productivist vision, were also having adverse effects on farmers in third countries, particularly countries that chose not to or could not afford to support their farm sectors. Farm prices in these third countries were suppressed by the effects of export subsidies from the EU on international prices and farm produce was 'dumped' on international markets to reduce storage costs in the EU.

A third strand to the critique is that the productivist vision actually compromises the very values that consumers in a mature market economy seek from rural land. Engels' Law notes how an increasingly rich society spends less on food. Such a society spends more on leisure and the countryside has emerged as a positional good, sought after as living space and playground by the affluent. It is the environmental and landscape values that are most challenged by the productivist vision and a narrow conception of vocational education.

A fourth strand in the critique comes from those who have observed the counter-intuitive consequences of the productivist mission. In the 1970s in the US, Jim Hightower launched a powerful critique against the 'land grant complex'- the tripartite system of support in the US that provided education, research and extension services to US farmers. His targets were the corporate agribusinesses which he saw as bleeding the life out of farmers at the same time a exploiting the land grant colleges which he described in a celebrated slight as 'tax-paid clinics for agribusinesses'. Essentially, Hightower's argument was the public investment in agricultural research, ostensibly to help farmers had in fact impoverished them and the benefits had been expropriated corporate agribusinesses.

What evidence is there of social responsibility in the productivist regime which extended through policy to education? The post-war push for food security in developed western countries was driven by an entirely understandable desire to avoid the starvation or defeat that could come from a shortage of food or strategically important products such as timber. The post-war reconstruction and modernisation of agriculture could thus be interpreted as a modernisation project driven by contemporary societal needs and conceived in the shadow of the cold war. In the immediate post-war years, the negative consequences of the modernisation project were not yet in the public domain and there was a strong consensus supporting the farm sector, even though some warning shots relating to resource management and farming had been fired by Aldo Leopold before 1950.

If the productivist regime and the vocational mission of educators to support that mission were socially responsible in the 1950s and 1960s, could the same be said in the 1980s and 1990s in the light of a powerful set of criticisms? In general my experience is that there were individual dissidents in agricultural educational institutions, but the dominant ethos was strongly productivist and the dominant view of staff was to sustain that productivist discourse. There was a great deal of productivist missionary work but not perhaps as much reflection on the social and indeed wider environmental consequences of the promulgation of that vision. To understand why that has been the case we need to delve a little deeper into the ways in which agricultural and forestry knowledge were constructed.

3 On methodological monism

An important characteristic of the land-based sciences, though it is by no means unique to them, is the combination of both the bio-physical and social sciences within undergraduate curricula. Until relatively recently, this multi-disciplinarity has not normally created any major methodological or epistemological difficulties to agro-food educators in that both sets of scientists have tended to assume both a predominantly positivist stance and an ethical neutrality in their approaches to education and research. More recently the ethical certainties of the mission in agro-food studies has been confronted by a sustained challenge and issues of social responsibility in education and practice have come to the fore as land use and food production have become much more socially and politically contested.

By and large the agricultural departments of European universities have been repositories of shared values among staff and students. The shared vision was to apply knowledge from the bio-physical and social sciences to the betterment of the agro-food system, and in its most naïve versions involved 'feeding a hungry world'. Behind this shared vision lay a unitary paradigm, rooted in positivist science, which revolved around creating within the education and research institutions the knowledge and then transmitting that knowledge through education and extension systems. There is no fundamental difference in the paradigm that has driven bio-physical and that which has driven the economics and management components of agricultural education. They are positivist, believing in the existence of an external world of social economic and biological facts that through the application of science we discover.

The dominance of productivist discourse in agricultural education ensured the dominance of the bio-physical scientists, which necessarily bought with it a positivist stance. However, as the study of the social and economic aspects of agriculture and forestry has evolved, so the methodological monism of

positivism has been subjected to a serious challenge. This challenge embodies many questions relating to social responsibility and is necessarily viewed through the lens of the social sciences and their development within and out with the land-based sciences.

In Western Europe, this positivist interpretation of the social sciences realm was dominant but not universal. Political economy has long been a more important part of French approaches to the economic and social analysis the agro-food sector. However, one or two English-speaking economists such as Glenn Johnson noted that the obsession with equilibrium conditions and the neglect of distributional issues was not entirely healthy, leaving economists searching for minute divergences from equilibrium whilst walking over mountains of human suffering.

In three areas of the social sciences, development studies, rural sociology and environmental philosophy, there have been alternative prevailing methodological perspectives at certain times. Many workers in development studies have been influenced by Marxian political economy. Whilst in the developed world, the mantra of the neoclassical economist has been to make markets work (even if the CAP meant that they could not), in the developing world the profound problems of development seemed to be rooted in the operation of the market system in colonial and post colonial models of dependency. In the post communist world, Marxian political economy may look rather unattractive as a methodology, but it has morphed into a critique (or at least a questioning) of globalisation. And, as Europe begins to dismantle the CAP under pressure from the WTO, some of the elements of the anti-globalisation critique are finding there way into political discourse and direct action in Europe (witness the actions of José Bové).

A second area where a critique of positivism has emerged is within rural sociology, condemned as recently as the early 1980s for being locked into 'a sociological time warp' (Bradley and Lowe, 1983). With significant contributions from Howard Newby, rural sociology has to a large degree, rejoined the mainstream of sociological thought. This new rural sociology was less a maidservant and more a critic of the impacts of the modernisation project.

Central to the alternative vision was a challenge to positivist scientific monism. The key idea of human beings as reflexive individuals, that using their power to act in the light of their knowledge about the social world in which they have what Giddens (1986) terms a double involvement. He notes:
We cannot approach society or social facts as we do objects or events in the natural world, because societies only exist insofar as they are created and recreated in our own actions as human beings. In social theory we cannot treat human activities as though they were determined by causes in the same way as natural events are. We have to grasp what I call the double involvement of individuals and institutions: we create society at the same time as we are created by it.
Giddens argues convincingly that social theory cannot be like the theories of the bio-physical scientists. Values and attitudes and understanding combine together to create particular behaviours which may defy rationist and positivist logic. Whether we are dealing with attitudes to GMOs, organic farming or animal welfare, it needs to be understood that such value positions are as much a social product as the product of the application and findings of positive science, and, importantly, cannot in many instances be changed by advances in that scientific understanding.

A third area where new non-positivist ideas have entered the rural world has been in the work of Jan Douwe van der Ploeg and the Wageningen rural sociologists. They have articulated what is sometimes termed a 'new rural development paradigm', which confronts and challenges the modernist project. They argue that the emergent globalised agro-food system is in a state of imminent collapse, because of its adverse social, economic and environmental consequences. Their new rural development paradigm eschews intensification and enlargement and favours pluriactivity and the adaptation of farming systems to produce quality products in a strategic relocalisation project that reconnects farmers to consumers and redistributes power in the food chain away from the global players. Whether it is wishful thinking or realisable vision remains unclear, but it challenges the

methodological orthodoxy, the unilinearity of the modernisation project and the neo-liberal policy regime which is seeking to implement the reconstituted modernisation project

A further strand in rural sociological work and extension studies has been a realisation that the transfer of technology model of extension may be flawed. This has been articulated in the constructivist thinking of Niels Röling and his collaborators (1998) and in the work of van der Ploeg (1994; 2003), which explores the deconstruction and reconstruction of core knowledge to create new opportunities for endogenous development. It also manifests itself in the challenge to conventional extension logic manifested in projects such as Landcare, which has been so prominent in broadening the agenda about land use and environmental management in Australia.

A final strand in the sociological literature is the growing interest in nature. Recent theorising by Macnaghten and Urry (1998) develops the theme that 'there is no singular nature as such, only a diversity of contested natures' (p.1). They take a very different view to mainstream environmentalists or even the environmental economists arguing that 'it is specific social practices… which produce reproduce and transform different natures and different values. These practices structure the responses of people to what is deemed to be the 'natural' (p.2).

A further critique of market capitalism can be seen in the work of environmental philosophers such as Mark Sagoff. Sagoff (1986) argues that rather than an economic system driven by consumer values, some decisions, articulated through the political process actually reflect citizen values. Rather than being individualist profit and utility maximisers we actually might think collectively and act on the basis of wider societal values. Such a view necessarily challenges the neo-liberal economic position by which individuals are judged capable of acting in their and society's best interest simultaneously.

The collapse of methodological monism within the social scientific component of land-based sciences exposes some wider concerns relating to social responsibility. A great deal of the critical approaches to what has happened in the farm sector emerged from outside the confines of agricultural education institutions. The UK example is particularly telling, with the critical works of Howard Newby (e.g. Newby 1979) in relation to rural society and John Bowers and Paul Cheshire in relation to rural economics (Bowers and Cheshire 1983). There was a significant aversion of agricultural social scientists to bite the hand that fed them and to engage in the wider criticisms that were being levelled at the agricultural modernisation project.

The monist epistemological position has been confronted and a plurality of values and approaches within the social sciences is now discernible. This has profound implications on how issues of social responsibility are explored within the discipline. The question of social responsibility in the education of graduates in the agro-food sector cannot be considered in terms of a singular social consensus, but must instead be seen as something that is negotiated and socially constructed through the actions of educator's researchers and other actors within the agro-food complex as a whole. The building blocks of this reflection or reflexivity are embedded in the critical social sciences, but largely absent if a more positivist epistemological monism is accepted. Under the reflexive approach, ethics, values and social responsibility acquire a much more important though still potentially non-explicit role.

The agricultural establishment has been variously contemptuous, uncomfortable and accommodating of the wide-ranging and multi-stranded critique of the social, economic, and environmental impacts of the modernisation project. At its most vehement, the critique of the scientific and educational establishment is that those who challenge the modernisation project are misguided fools and malcontents, who fail to understand the benefits of modern science in the service of mankind.

At its more accommodating, the scientific establishment and the associated educational institutions have broadened the boundaries of the subject. This is particularly evident in the accommodation of environmental management as a core concern and the emergence of the new philosophy of multifunctionality. In its accommodating form the establishment simply extends the boundary of interest to include more of the elements of the rural environmental and land use system to embrace

those new products and services such as conservation, biodiversity, landscape and recreational opportunity that society now places greater value upon.

4 On redrawing the boundaries

There have been growing doubts about the relatively narrow degree of analytical closure around subject domains. In practice, agriculture and forestry students have often been presented with a predominantly productivist message which has often failed to fully consider the negative impacts of such production systems on third parties or the environment. In short, educators and researchers have taken a blinkered and narrow view of the subject domain, maintaining a productivist thrust, when such thinking is not only out of step with wider societal and political wishes but is also profoundly damaging to the creation and nurture of new values of rural space which underpin the future of Europe's rural areas.

It is perfectly possible to redraw the boundaries of the subject within a positivist approach. This can lead to a wider recognition of both positive and negative external effects. It may lead to a focus not so much at farm or forest level but at drainage basin level, such as is manifested in catchment planning in Australia and the Water Framework Directive in the EU. In many ways, the new multifunctionality paradigm can be conceived as a broadened conception of the range of outputs (and necessary inputs) arising from a broadened conception of how rural land should be managed.

The broadened positivist paradigm has often drawn new ecological blood into agricultural institutions. The ecologist's view of the world can sometimes sit reasonably comfortably with a view of agriculture and forestry as applied resource management, as long as the applied resource management accords with ecological principles. Often within the modernisation project, agriculture and forestry appear to depart from such a view and are based on simplification of natural systems and a very high degree of dependence on bough-in inputs. So in spite of its common largely positivist roots, the entry of ecological science has raised new challenges. Can the depletion of biodiversity, the loss of soil, the pollution of water supplies and compromised welfare conditions arising in many modern farming systems be regarded as good examples of ecologically sensitive management systems? Given public disquiet about these impacts, it is not possible to reject these ecological concerns as frivolous. One can make the case for a moral responsibility of the agricultural education system to embrace the principles of sustainable development in more than a merely tokenistic way.

An alternative 'reading' of the need to redraw boundaries is the need to accommodate disciplinary approaches that challenge the positivist interpretation. Instead of incontrovertible social and economic facts we find competing discourses in relation, for example, to farming and environment, food safety and forestry. Further, areas of economics, such as micro-economics and welfare economics, long thought by some to be value free can be considered as value-laden (see e.g. Nath 1973). As Robinson (1964) asserts, economics has always been partly a vehicle for the ruling ideology of each period as well as partly a method of scientific investigation.

It is possible to redraw the boundaries of subject matter of land-based science with respect to bio-physical sciences relatively unproblematically, though this may cause discomfort amongst bio-physical scientists who have seen the pollution problems of intensive agriculture as some else's concern rather than theirs. However the redrawing of the social element of land-based science must be considered as at least in part ideologically driven and shaped by prevailing social, political and economic values. In a post-modern, post-productivist society, competing discourse and competing demands on rural space, articulated in part through social process and in part through the market and mediated by power relationships and political processes present a much bigger challenge to the community of land-based scientists.

5 The future challenge

This section tries to offer a few examples of contemporary challenges to recognise social responsibility in the land-based sciences.

The first challenge is to realise that agro-food systems are not value-neutral outcomes from a set of abstract market forces working in association with a body of scientific knowledge, but a social construction in which prevailing power structures and values inhere and which is transformable over time in response to shifts in values, as well as in response to shifts in the knowledge base. The shift from protective productivism to neo-liberalism in policy agendas has profound impacts on a range of actors. It is the responsibility of those involved in education in the land-based sciences to explore the consequences of the policy 'choices' that may be foisted on the powerless or on the bio-physical realm, which is equally incapable of answering back.

The second challenge is to realise that the accumulated knowledge base is not of itself an objective reality but a social construction created by the values of scientists, educationalists, politicians, practitioners in the farm and food sectors and consumers. That accumulated knowledge base drives behaviour and shapes the social and bio-physical world in which different actors operate. At different times and for different reasons there may be greater or lesser degrees of accord in the universality and acceptance of dominant values and the use made of particular bundles of knowledge. Where the knowledge base is insufficient to meet contemporary needs there may be a paradigm shift which leads to a new set of scientific puzzles to solve.

The third challenge is to acknowledge that in recent years there has been a high degree of discord in the prevailing value systems and a high degree of mistrust by consumers about the agricultural modernisation project. This loss of faith in the modern scientific mission has come about because of both the evident headline crises such as BSE and much more prosaic examples such as water pollution, loss of biodiversity and deterioration in landscape quality. To many people, normal science in the agricultural field seems to be misdirecting its efforts, drawing down huge sums of public money in Dolly the Sheep-type genomic projects, whilst ignoring the crisis in food and health and the general deterioration of the biosphere.

The fourth challenge is to realise that social responsibility in higher education in the agro-food sector has been cultivated largely through informal means and will probably continue to be delivered through such means. Different educators in the system have different values and these will manifest themselves through choice of subject matter, choice of case study examples etc. As the multi-stranded critique of the agro-food sector has emerged the consequence, even in the educational community, was initially a defensive position, based on the view that the prevailing scientific approach was socially responsible but that the science needed rolling out into new arenas to address the residual problems. But for many critics, this 'more of the same' response is highly problematic because it ignores the existing power relationships, the information asymmetries that exist and the complex and competing values of post-industrial societies. Consequently it is important to ensure that students are not simply fed disciplinary orthodoxy through their lectures and other work, but develop critical and reflexive skills through carefully managed learning environments. It is not necessary that the social values are made explicit, but it is important that the heterodox views of contemporary society are confronted by students of land-based sciences.

A fifth challenge is how to accommodate the diversity of values and discourses about agriculture/food/rural. As the subject range in agricultural HE institutions has broadened to accommodate these new values, so the plurality of values that are embedded in teaching have multiplied accommodating a range of values that ranges from deep ecology to support for the agrarian fundamentalism of peasant resistance movements such as the Zapatistas. It is probably worthwhile to cultivate social responsibility through specific modules, though where this is the case, as in KVL, there is a danger that the questioning of values in courses dealing with Agricultural Ethics does not

permeate the whole educational process but is seen as at best a compulsory add-on and at worst an option that will be neglected by most students.

A final challenge is to realise that social responsibility cannot be cultivated in isolation of the real world. Many agricultural education institutions are located remotely from metropolitan hubs. This may protect the students (and staff) from the attractions of the bright city lights, but may at the same time fail to expose to the students the prevailing values that exist in mainstream urban society.

6 Conclusion

The shift from a broad consensus on the social responsibilities associated with land-based science to an altogether more heterodox situation brings with it a major challenge for those involved in education in the land-based sciences.

This shift is in part a shift of mainstream societal values, which in some countries at least have become rather critical of the agricultural modernisation project, which had received almost universal support in the post-war period.

The incorporation of new strands in environmental thinking and the broadening of the study of farm systems to accommodate multifuntionality poses no fundamental challenges as long as the policy system can send appropriate signals to actors on the ground.

However, there has also been a shift within the social sciences to a rather more complex appraisal of rural social and economic systems, which brings competing epistemologies and new values into the previously largely consensual epistemological framework.

There are profoundly important questions about how social responsibility is best inculcated into land-based science curricula. The ad-hoc arrangements of the past will probably continue into the future. In other situations, specialist courses in ethics will be developed, for which the modernisation project throws up an enormous array of subject matter from GMOs, to genetic piracy, to animal welfare and ecological and environmental responsibility.

Whilst we can legitimately be uncertain as to whether issues of social responsibility are best embedded in normal modules or treated as free-standing units, there can be no uncertainty about the need to address in a more up-front way the ethical issues that arise in contemporary land use systems.

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Improving the first destination of graduates: an institutional challenge

Philippe Ruffio[1], Emmanuelle Degorce[2], Michel Duthoit[1] and Marie Pierre Petitjean[3]

[1]Dept. of Rural Economics and Management, [2]International Relations Office, [3] Head of Careers Service, AGROCAMPUS Rennes, France

philippe.ruffio@agrocampus-rennes.fr

Abstract

Finding a first destination is a challenge for graduates, higher education institutions and employers alike. Graduates look to minimise the risks of an unsuitable first destination and its consequences for their future career and professional development. Institutions seek to optimise society's substantial investment in education by getting their graduates off to a successful career start. Employers try to minimise recruitment costs and to avoid the consequences of mis-recruitment (delays, disruption of existing teams, etc.).

Therefore finding a successful first destination is not only the responsibility of individual students but, through careers guidance, is also part of the educational process for which the institutions are responsible.

This type of action requires a set-up that gets students themselves to take matters in hand. The challenge is therefore to get students to see the need to make informed decisions. They need help in being made aware of their abilities, their wishes, their strengths and their weaknesses and they need to be prompted to take the necessary steps and to be pro-active about their education, to give meaning to the skills they acquire and to control the circumstances of their first recruitment.

On the basis of the recent experience of *Agrocampus Rennes* (France), this paper aims to analyse how a higher education institution may address this issue and may try to respond to the need for a tutorial/training process for the career start of students/young graduates.
For several years now *Agrocampus Rennes* has conducted an active policy of individual support for its graduates in finding their first destinations. Apart from other existing conventional activities, the paper focusses on two different recent initiatives: the career planning process and the occupation profiles project.

The paper also provides some figures about the first destination of French agricultural students and recalls about the general organisation of the French agricultural higher education system.

1 An overview of the issues

With the state of the job market being as it is, graduates can no longer rely solely on a degree, however prestigious it may be, to find employment after completing their studies. The sheer variety of degrees and courses, the ever wider spectrum covered by agricultural higher education, the growing importance of specialisation in students' education and training, the competition from other types of courses, the changes in employment sectors and in the positions for which new graduates are recruited make it more difficult than before to get into the job market.

Paradoxically, graduates from our institutions get a good education but, because of their academic career, are not as much in touch with the world of work as young people having been through more vocationally-oriented educational courses (with vocational diplomas or first degrees).

Finding a first destination is a challenge for graduates, higher education institutions and employers alike. Graduates look to minimise the risks of an unsuitable first destination and its consequences for their future career and professional development. Institutions seek to optimise society's substantial investment in education by getting their graduates off to a successful career start. Employers try to minimise recruitment costs and to avoid the consequences of miss-recruitment (delays, disruption of existing teams, etc.).

Therefore finding a successful first destination is not only the responsibility of individual students but, through careers guidance, is also part of the educational process for which the institutions are responsible (CEFI, 2004).

Our universities are responsible for avoiding excessive trial-and-error or worse still failure because of a poor choice of first destination with the disastrous effects it may have on graduates' self-esteem or on their future career paths.

For all these reasons higher education institutions are fully justified in actively supporting graduates in finding their first destinations and this is arguably as much their responsibility as is their duty to provide a high standard of education.

This type of action requires a set-up that gets students themselves to take matters in hand (Stephan, 2004). Not only should students be provided with information but they must be made aware that they need this information to make the right decisions. The challenge is therefore to get students to see the need to make informed decisions. They need help in being made aware of their abilities, their wishes, their strengths and their weaknesses and they need to be prompted to take the necessary steps and to be pro-active about their education, to give meaning to the skills they acquire and to control the circumstances of their first recruitment.

On the basis of the recent experience of *Agrocampus Rennes* (France), this paper aims to analyse how a higher education institution may address this issue and may try to respond to the need for a tutorial/training process for the career start of students/young graduates.

We first set out the general framework of agricultural higher education in France and describe the state of the market for graduate recruitment on the basis of recent survey results. Then we analyse arrangements recently put in place in Rennes emphasising the role of two pilot schemes.

2 The French agricultural higher education system

The French agricultural higher education system is original in that it is part of the *école d'ingénieurs* system and has a long history of control by the Ministry of Agriculture.

Post-graduate engineers[1] enjoy a very specific socio-economic position in France. 'In none of the major developed countries, including those which, like the United States and Germany, were the first to promote higher education to train their technical elites, is the distinction between engineer and technician so contrasted, nor the social prestige attached to an engineer's title so high' (Bouffartigue and Gadéa, 1997).

Their education is provided within a specific system known in France and abroad as *Grandes Écoles* or *Écoles d'ingénieurs*, which developed historically alongside the conventional university system. The *Grandes Écoles d'ingénieurs* were first set up as part of the late 18th century Enlightenment and developed with the positivist movement. With the impetus of a centralised, interventionist state they expanded in the 19th century to cater for most sectors of the economy (agriculture included) turning out highly qualified managerial personnel capable of ensuring the modernisation and economic development of a newly industrialising country. This form of education gradually took precedence

[1] A master's type degree: five-year course (300 ECTS credits).

both in economic spheres and in public administration. Thus engineers have achieved a very high socio-economic standing within French society and in business circles, higher than that of most conventional university graduates. However, they make up less than five per cent of the overall output from the French higher education system.

French agricultural higher education is strongly anchored in this tradition of engineers' education. Unlike in other European countries, there are broadly-based, multidisciplinary curricula with an emphasis on management. This is why economics and management courses are so significant and case studies or work placements feature very prominently, as does foreign language teaching, which is generally mandatory and has gained importance over the last decade.

Education has been dramatically transformed over the last 20 years to take on board changes in agriculture, the rural world and the food chain. The professional outlook of graduates has become much broader, reaching far beyond the bounds of agriculture alone. As in other countries, there is an ongoing debate in the academic community as to whether certain changes are warranted, be it new degree profiles to be developed or the respective standing of fundamental and applied science (Ruffio, 1995).

These factors explain why engineers, whatever their specialist area, fare better than university graduates statistically when it comes to finding employment; they enjoy lower unemployment, faster first recruitment, higher incomes and more dynamic career paths (e.g. Koubi and Mazars, 2003).

3 Characteristics of the first destinations of French agricultural graduates

A recent survey conducted by Toulouse Social Sciences University's Student Observatory for the Ministry of Agriculture reported on the first destinations of engineers graduating from the Ministry's institutions in 1998 (analysis of their initial employment and their occupation in 2002, that is four years after graduating) (Boudier, 2003).

Table 1 shows the survey's main findings, separating the three main categories of agricultural educational institutions:

- public institutions belonging to the group of *écoles nationales supérieures d'agronomie* (Paris, Montpellier, Rennes, Toulouse, Nancy, Dijon–Food Sciences) (I)
- other public institutions (Bordeaux, Clermont-Ferrand, Nantes, Dijon–Agricultural Sciences, Angers–Horticulture, etc.) (II)
- *écoles supérieures d'agriculture*, private institutions under contract to the state (Angers, Purpan, Beauvais, Lille, Lyon, Val de Reuil) (III)

The survey shows French agricultural science graduates get a good start on the career path. First recruitment is rapid and to good positions insofar as most graduates take up managerial positions. Respondents report this is because of the wide scope of their education, their experience abroad (especially work placements), their foreign language skills, and the career development and employment services of their educational institution. The placement when preparing their master's dissertation is also important in this respect.

The survey does reveal, however, differences by sex and type of institution from which respondents graduated.

Women continue their studies more often than men, who move into working life more quickly. Women are recruited more often on provisional contracts and remain (four years later) less well positioned on the labour market.

Table 1: First destination of 1998 graduates and their employment situation in 2002

	Type of institution			
	(I)	**(II)**	**(III)**	**Total**
Number of graduates surveyed	358	348	361	1067
Sex				
Male (%)	**38.5**	49.4	53.2	47.0
Female (%)	61.5	50.6	46.8	53.0
Family background				
- Farming (%)	7.5	17.0	**33.2**	19.4
- Managerial, liberal professions (%)	**58.6**	44.6	40.6	47.9
- Others (%)	33.9	38.4	26.2	32.7
Further education (after graduation in 1998) (%)*	**27.4**	23.9	19.1	23.4
Average time to find first employment (months and days)	2 m 12 d	2 m 25 d	2 m 1 d	2 m 25 d
- male				1 m 28 d
- female				2 m 25 d
% of graduates in employment after 3-months' job-seeking	61.5	64.9	**68.5**	65.0
- male				72.4
- female				58.6
Type of employment contract (first job)				
- provisional	65.6	60.8	69.4	65.4
- permanent	34.4	39.2	30.6	34.6
Main areas of employment in 2002 (4 years after graduation)				
- food processing industry	18.5	15.1	21.3	18.4
- farming and related areas	11.4	12.7	**18.8**	14.3
- business services (related to agriculture)	10.1	11.0	**15.6**	12.3
- business services (unrelated to agriculture)	**18.2**	7.2	4.1	9.8
- education and research	8.1	11.4	8.9	9.4
- marketing food and agricultural products	3.9	5.1	**8.9**	6.0
- public administration related to agriculture	5.5	**8.6**	4.1	6.0
- other public administration	6.2	7.9	2.9	5.6
% related to farming, food and environment	58.7	74.1	**84.3**	72.5
% managerial staff	**80.2**	64.9	69.0	71.6
% in multinational firms	**39.3**	24.2	26.2	30.0
% in public sector	15.1	**28.0**	7.2	16.6
Unemployment level in 2002	4.5	**2.6**	4.2	3.8
- male				2.6
- female				4.7

* graduates having started new courses after completing their agricultural degree course (obtained in 1998)

Source: Boudier (2003)

The recruitment patterns[2] and social backgrounds of students at the three types of educational institutions investigated are somewhat different. Likewise, graduate access to the job market is variable. Graduates from category I institutions tend to go on with their studies and many go into employment unrelated to the food chain, in which they work in managerial positions. Most graduates from category III institutions go into food chain-related sectors while those from category II favour the public sector at intermediate levels of responsibility.

However, to maintain their lead and to cope with recent difficulties on the job market and with growing competition from other educational courses (e.g. business and management), some institutions have opted to become more actively involved in the career development of their graduates.

4 A structure to promote graduate career starts: the case of *Agrocampus Rennes*

For several years now *Agrocampus Rennes*[3] has conducted an active policy of individual support for its graduates in finding their first destinations:

- by formalising an individual career-planning process for each student[4]
- by providing students with a set of tools and resources as part of a specialised career development service.

Thus in addition to the conventional activities included in the students' basic education (work placement, conferences with visiting professionals, compulsory teaching modules for human resource management, etc.), various services are available to students based on their own personal initiatives.

The primary mechanism is to encourage students to think in terms of developing their own career paths and to ensure they are doing so, to facilitate its formulation and then possibly to help them with the process.

This mostly involves:

- group training sessions on recruitment techniques, interviewing and writing a curriculum vitae.
- organising an annual one-day recruitment fair attended by some thirty firms or organisations. Students attend presentations by these firms, make direct contacts with them or participate in round-table discussions on the various careers in their specialist areas.
- provision of a database of entrance-level vacancies, which is updated weekly and can be consulted on the internet.
- access to a specialist library on employment, careers, firms and supervised access to a set of multimedia resources (telephone, fax, computers).
- customised individual support with career planning.
- development of a set of occupation profiles which graduates in our sectors may take up.

The last two initiatives were introduced recently and have been the subject of special focus in recent years. They are worth a closer look.

4.1 - The career-planning process

[2] Schematically at the end of secondary education (type III) or at bachelor level (type I and II).

[3] This is a new organisation formed by the merger in 2004 of *l'École nationale Supérieure Agronomique de Rennes* (ENSAR) and *l'Institut National Supérieur de Formation Agro-alimentaire de Rennes* (INSFA). It turns out some 200 graduates a year at master's level.

[4] There is also a formalised process for supporting and advising students on their individual education and training (system of personal tutors among teaching staff and formal trial presentation of an educational project to a panel of tutors).

Definition
A service has been in place since 1997 to provide individual support to each final-year student. The service is based on entitlement to an individual interview with a specialist in this area.

Students are free to take advantage of this opportunity if they so wish. They are told of it during their course and actively reminded of it at the beginning of their final year.

The institution secures the assistance of a team of paid advisors (human resource managers, recruitment officers or career guidance officers, recruitment consultants) who all share the same concerns and apply the same method (preparation and interview form).

Each student wishing to participate is assigned to an advisor with whom the student goes through one or more interviews. The two-hour per student interview credit is generally spread over two or three interviews, depending on how far advanced the student's career-planning process is.

The objective is to move gradually (using the other tools available) from a somewhat hazy idea about a possible future occupation to a specific project and a coherent action plan designed to open the gateway to the desired position. In other words, students move to a position where they are aware of their strengths and of where they stand relative to the environment and are themselves convinced and can convince others that their objectives and ambitions are achievable.

Process
The approach used is similar to the funnel process and involves personal reflection on external factors (the economic situation, the state the sectors of activity are in, changes in careers available, the labour market), internal factors (review of hopes and aspirations, evaluation of own potential, definition of objectives, review of skills, etc.) and ends by focusing on an action plan including the sector of activity, type of occupation and specific job, combined with a strategy to achieve it. This strategy includes a time-frame and concrete resources.

Within this process, the confrontation between oneself and the real world is essential. A thorough knowledge and evaluation of both is required. Information about external factors can be investigated by anyone at their own level provided they have the resources to direct their research and to be in a state of personal preparedness that allows it. The interviews are therefore aimed at reinforcing the students' realism and developing their ability to seek out relevant information and then to move in the direction they want to go.

The interview therefore runs through the following stages:

- becoming aware of aspirations and objectives,
- objectivising strengths and weaknesses,
- formalising a project including the chosen sector and career,
- defining and planning what steps to take.

Each student receives a personal dossier covering the different stages and presupposing a personal preparatory phase for each stage. The final formulation of the project involves a full write-up validated by the advisor.

As the process is a voluntary one, the students give an undertaking to see it through to the end. Completion is formalised by a final written document signed by both student and advisor.

Appraisal
This action is now well tried-and-tested and is widely taken up by students. Some 70 per cent take avail of the system. A network of some 40 professionals regularly participate and meet twice yearly to evaluate the action in qualitative and quantitative terms and to take it forward.

4.2 - The occupation profiles

Definition
Agrocampus Rennes undertook early in 2001 to draw up a list of occupation profiles[5] that graduates might take up in the farming, agrifood and environment sectors. Since 2003 this action has been extended nationwide and *Agrocampus Rennes* co-ordinates a working party with participants from most French institutions.

This action is designed to meet three requirements:

- increasing demand from **students** for greater visibility of the contents of the occupations in question. They need clear and precise information to develop their career plans, to choose their specialist subject for their master's degree and to prepare for job seeking or for recruitment interviews.
- the need of **teaching staff** to update course content and curricula and match them to employers' needs and expectations. This information also provides fuel for dialogue with students.
- the need for our institution to have a reference and **evaluation tool** to validate the work experience of professionals (mature students) when awarding qualifications.

This is a tool for internal use. It is not intended as a communication tool to explain occupations to secondary school pupils during careers guidance or to inform potential employers about the courses provided.

Each occupation profile provides four categories of information:

- mission: general objectives of the occupation within a firm's organisation of work.
- activities: list of the main activities characterising the occupation; actions or groups of actions to be performed in this occupation, which may be ranked in hierarchical or chronological order.
- competencies: these are the skills needed to successfully carry out the occupation.
    - Knowledge: acquired in the course of initial or vocational education and training; areas of knowledge required to perform the occupation together with their level based on a rank order (basic, competent, skilled, expert).
    - Know-how: true potential to do the work that may be nurtured through vocational experience or in-service training.
    - Predisposition: personal qualities, behaviour, affinities, temperament.

The competencies indicated are those which are both specific and relevant to the occupation.

- Occupational environment: localisation and working conditions (co-workers/travelling).

To date some 30 occupation profiles have been drawn up covering sectors as varied as animal and plant production, agrifood industry, the environment, and occupations ranging from commercial activity to consultancy via management. A sample occupation profile is appended.

Drawing up the occupation profiles
The occupation profiles are developed by a high-resolution analysis in several stages:

[5] An occupation (*métier* in French) profile is a generic term for a collection of professional activities describing the common features (usually 60–80 per cent) of a set of positions whose main activities are of a similar kind and where the competencies and know-how involved are relatively uniform, while escaping the constraints of the diversity of structures and employment situations.

- preliminary documentary analysis: company job descriptions, job vacancies, etc.
- semi-directed individual interviews with 3–5 professionals currently working in the occupation under analysis and having a degree of control over their employment situation.
- validation by a panel of serving professionals and teaching staff to reach final consensus on the contents of each occupation profile.

The professionals chosen are a non-representative sample but do provide a grasp of the diversity of situations. The panel discussions are designed to identify the core features of the occupation.

Appraisal
This iterative process (collection of information, synthesis, validation) is time-consuming, demanding and expensive. It entails mobilising specific human resources which are now pooled at national level. Moreover, the process requires regular revision (planned for every 3–5 years) of the profile contents and of the occupations list (mapping) which had to be drawn up beforehand.

In terms of their use, these profiles must provide objective benchmarks against which students can align their ideas about the realities of work. However, there is nothing hard and fast about them as professions are never static. Nor does each professional necessarily exercise all the functions at one and the same time. This is why students using the profiles are advised to discuss them with other students and teaching staff who know these occupations or with their advisor (see above).

Overall, this project is currently at the development stage, and its promoters have been surprised at the interest shown by the firms and organisations contacted. Some professional partners even envisage using this tool to clarify and define the occupations relevant to them, particularly with a view to certification of quality assurance systems in their business.

5 Conclusion

The experience acquired in Rennes in terms of first destinations of graduates shows that a successful process depends on a number of factors which cannot always readily be brought together:

- a firm commitment from the institution's governing bodies,
- acceptance of the operating costs of such a set-up,
- mobilisation of specific competencies to co-ordinate and operate the system,
- enhanced awareness of teaching staff,
- an information system.

The approach must also be open to the outside world and conducted in a network with the world of work (firms and potential employers, alumni associations or specialist employment centres[6]).

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[6] For instance in France: APEC: *association pour l'emploi des cadres* (association for the employment of managerial staff) or APECITA: *association pour l'emploi des cadres, ingénieurs et techniciens de l'agriculture et de l'agroalimentaire* (association for the employment of executives, engineers and technicians in agriculture and the food industry).

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Appendix: A sample occupation profile (in French)

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Secteur d'activités : ***PRODUCTIONS VEGETALES***

sous-secteur *: Appui technique à la filière*
réf. fiche : PV- S4F3n°4

Ingénieur CONSEIL(LERE) SPECIALISE(E)
(en agronomie, en productions végétales, en productions légumières…)

Mission

Apporter méthodes, appui et conseils à l'agriculteur, par des interventions collectives et individuelles, pour l'aider à atteindre ses objectifs de production de qualité, en fonction des contraintes techniques, économiques et environnementales

Activités

Accompagnement collectif

- Proposer ou faciliter l'émergence de thèmes de travail collectif (formations, démonstrations, campagnes de mesures…) pour les agriculteurs
- Développer et mettre en œuvre des méthodes et des moyens permettant de diffuser des informations et d'accompagner le transfert d'innovations (réunions, visites de terrain, portes ouvertes, voyages d'étude…)
- Concevoir et assurer des interventions dans des formations au profit des acteurs du monde agricole (groupe d'agriculteurs, techniciens, étudiants…)
- Rédiger des articles pour les agriculteurs et autres personnes concernées (résultats d'essais, sensibilisation, conseils de saison…)
- Conseiller les agriculteurs et leurs organisations face aux procédures administratives et réglementaires

Accompagnement individuel

- Analyser les besoins des agriculteurs et leur proposer des services et prestations adaptés aux contraintes techniques, économiques et environnementales de l'exploitation (diagnostic des cultures, conseil de fertilisation, assolement…)
- Mettre en œuvre la prestation chez l'agriculteur (analyser la situation, proposer des conseils, suivre les mises en pratique)
- Proposer des solutions en réponse aux demandes ponctuelles

Veille et recherche de références

- Assurer une veille technique, scientifique et réglementaire
- Maintenir et apporter son expertise technique
- Proposer des expérimentations en station expérimentale ou chez l'agriculteur, les mettre en place, les suivre, interpréter les résultats, les synthétiser et les communiquer

- Monter et réaliser des projets individuels ou en collaboration : réponse aux appels d'offres, recherche de moyens et de partenaires, présentation devant les instances concernées…

Compétences

Savoirs	*Savoir-Faire*	*Savoir-Etre*
• Connaissances approfondies en agronomie et en productions végétales • Connaissance du milieu agricole • Notions en sciences de l'environnement (hydrologie, science du sol) et en productions animales • Notions d'économie agricole et de gestion	*Capacités* : • à animer et à communiquer en public • à travailler d'une façon autonome mais aussi en équipe • à s'organiser pour gérer de front des activités multiples et variées • à concilier des points de vue différents	• aisance relationnelle • écoute • adaptabilité • ténacité

Environnement du métier

- ***Localisation* :**

Chambres d'Agriculture, groupements de producteurs, coopératives et négoces, instituts et centres techniques agricoles, cabinets d'études…

- ***Spécificités du métier :***
  - Métier avant tout sur le terrain, avec de nombreux déplacements
  - Pluridisciplinarité et disponibilité sont nécessaires pour faire face à de multiples et diverses sollicitations qu'il faut évaluer
  - Travail en équipe (confrontation des expériences, harmonisation des méthodes, apport d'informations…)

Dans les structures à but lucratif, se rajoutent des activités à dimension commerciale.

date de validation : 16/10/2003

The motivation of secondary-school students to select institutions of higher education – a Hungarian case study

Illés B. Csaba, Kosma Timea and Komáromi Nándor

Institute of Business Economics, Faculty of Economics and Social Sciences, Szent István University, Gödöllő, Hungary

Illes.B.Csaba@gtk.sie.hu

Abstract

Ever since the 1990's, there has been a steady increase in the number of secondary-school students advancing to colleges. As a result, the structure of higher education is in a continuous transformation that follows the demands of the market and there is an increasing competition among the various institutions. Consequently, enrollment strategy as part of institutional strategy has gained priority and a deeper understanding of the school selection strategy of college applicants enjoys an ever greater importance.

Having realized the significance of this issue, the Faculty of Economics and Social Studies of Szent István University has launched a motivation study on school selection. The survey was conducted among the full-time and correspondence freshmen of two colleges at the time of enrollment during the academic years of 2002-2003 and 2003-2004, respectively. The main objective of the questionnaire survey was to determine the factors contributing to the students' selection of institutions, majors, campuses, etc., and their relative importance. For the sake of easier processing, a greater number of closed questions were compiled but the form included a number of open-ended questions as well as range-selection and multiple-choice options. Among the processing methods, single-variate statistical tests, variants analysis as well as factor analysis were employed.

The most significant findings of the study are as follows:

- With regards to the social recognition of the selected major (profession), prestige enjoys top priority, closely followed by salary levels then social usefulness and personal independence. The managerial position related to the selected profession as well as its creative nature were listed among the lesser important factors. When studying the internal correlation of the responses, a factor analysis led to determining three factors: acknowledgement, characteristics of the working conditions and those of the profession. These three accounted for 66.2 percent of the variances within the sample.
- The five most significant factors in selecting a university, a major and a division were the following: fit for one's interest, fit for one's character, the level of training, the range of universal knowledge provided and the level of income guaranteed by the selected profession. Among the least significant factors the followings were listed: "just to get away from home," "a lot of other students from my school apply to this institution," "continuation of a family tradition," "good facilities in the student halls," "selection by pure chance."
- With respect to the sources of information, the Internet is becoming more dominant as a result of the "sulinet" (school-net) project recently launched by the Ministry of Education, which has been gradually increasing Internet access in the institutions of secondary education. Of all the respondents, 86 percent ranked the amount of enrollment information provided sufficient. A factor analysis on the information sources influencing students' decisions revealed the following factors: media tools, traditional factor, e-factor, institution factor and community factor. These five combined accounted for 59.9 percent of all the variances.
- When weighing the importance of the various aspects of school selection, consideration must be given to the ranking of the institutions on the application forms as students presumably

have different expectations towards their first and fith choices, respectively. Of all the students designating Szent István University as their first choice, 23.53 percent selected another major within the same university proving that their motivation of institution selection was strong. Therefore, the ranking of institutions on the application form and even the number of colleges listed thereon are important elements of enrollment strategy.

1 Introduction

The period of the last one and a half decades or so has resulted in significant changes in the educational system as well. Similarly to the processes that had begun in the developed world earlier, education in Hungary is gaining an ever more important role in establishing the conditions for socio-economic developments, higher living standards, freedom in selecting one's profession, and working conditions promoting individual skills and successes. As a result of new provisions of the law, the systems of institutions and vocational training have undergone a transformation, the age limit of compulsory education has been raised, secondary-level education has become the norm and adult education has advanced to a massive scale and at a faster pace. (Kozma, 1998)
Ever since the 1990's the number of those planning to advance to college has increased and now involve those straight out of secondary schools, ones who failed their entrance exam before and those already enrolled at other colleges. From the perspective of higher education, an increase in the number of college students is expected to meet the growing demand. Demographic factors (a decrease in the number of children), however, have a significant impact in the opposing direction. As a result of this dual process, the level of knowledge among college freshmen is characterized by greater deviations. (Lannert, 2001)
One factor behind this expansion is a high level of qualitative differentiation in the past and in the present. One recent tendency is that this deviation has nothing to do with the differences between the various institutions and programs but rather with their individual qualities.

2 Conditions, Goals and Methods of the Research

The present study focuses on the key results of the survey conducted on the motivation of institution selection among two university-level and two college-level full-time and correspondence classes of the Faculty of Economics and Social Studies of Szent István University.

The survey was completed among the freshmen students of the majors involved in the study at the time of enrollment for the academic years of 2002/2003 and 2003/2004, respectively.
The main objective of the survey was to determine the factors contributing to the students' selection of institutions, majors, campuses, etc., and their relative importance.

For the sake of easier processing, a greater number of closed questions were compiled but the form also included a number of open-ended questions as well as rating-scale and multiple-choice options. During the compilation of the structure of our questionnaire we took account of Lehota and Komáromi's experiences. (Lehota-Komáromi, 1998)

For the procession of the questionnaire-based database we have used the statistical software package "SPSS 10.0." As the first step of the assessment, we calculated the descriptive statistical indicators of the whole database (frequency, relative frequency, analysis of frequency distribution, mean and standard deviation of rating scales). Next we assessed and compared the various segments of the sample. These segments were either educational or geodemographic segments. Major, class, sex, income status, place of residence. In order to demonstrate significant deviances, we employed the Chi-square test (nominal scales) and the analysis of variants (rating scales). Deviances at or over 95 percent were considered significant. For the internal analysis of scaled groups of questions (e.g. motivating factors) we used factor analysis (and varimax rotation, if deemed necessary). Based on the motivating factors, we also created respondent segments by means of cluster analysis (k-means method) but elaborating on that would extend beyond the limitations of the present article.

Composition of the Sample

Among the respondents of the survey 38 percent were male and 62 percent female; the distribution of classes and majors are listed in the table below. (Table 1)
The sample is representative of 60.17 percent of all students.

Table 1: The number of students and distribution of the sample

Major		Class		Total
		Correspondence (students)	Full-time (students)	
College	AM	-	31	31
	MVTA	67	27	94
University	KG	54	88	140
	GAM	47	99	146
Total		168	243	411

Note: AM – BSc in agricultural management; MVTA – BSc in employment counselling;
KG – MSc in business economics; GAM – MSc in agricultural economics and management

The key structural elements of the survey were as follows:

- An analysis on the demographic data of the participants.
- A research on the factors of societal values.
- An analysis of the factors influencing the student's selection of university, faculty and major.
- Frequency data of information sources used in the process and pinpointing information gaps.
- An estimate of the expected costs of studies.
- Reputation of institutions appearing as competitors in higher education with regards to specific majors.

3 Research Findings

Factors influencing application to universities

Question 1 investigated how important roles certain factors played in the social recognition of a profession according to the respondents. The factors were given a value on a scale between 1 and 5. (1=completely irrelevant, 5=very important)
With regards to the social recognition of the selected profession (major), prestige enjoys top priority (average: 4.25), closely followed by high salary (3.89) then social usefulness of the job (3.72) and a great deal of independence (3.71). The managerial position related to the selected profession (3.63) as well as its creative nature (3.35) were listed among the lesser important factors. In comparison with the results of last year's survey, we found that the prestige and the high salary level of a given profession were significant factors even among students admitted a year before!

When studying the internal correlation of the responses, a factor analysis led to determining three factors: (Table 2) These three accounted for 66.2 percent of the standard deviances within the sample.

The "recognition" factor represented 25 percent of the deviation square; understandably, the sign of the factor of individual recognition (high salary) was opposite to that of social recognition (social usefulness). Characteristics of the work influenced the assessment of respondents up to 22 percent while that of the profession reached 19 percent.

Table 2: Rotated factor matrix

	F1 Recognition factor Weight: 25%	F2 Work characteristics factor Weight: 22%	F3 Profession factor Weight: 19%
High salary	0.780		
Social usefulness of the work performed	-0.771		
High level of independence		0.793	
Creative nature of the job		0.786	
Ranking and prestige of the profession			0.884
Managerial positions linked to the profession			0.587

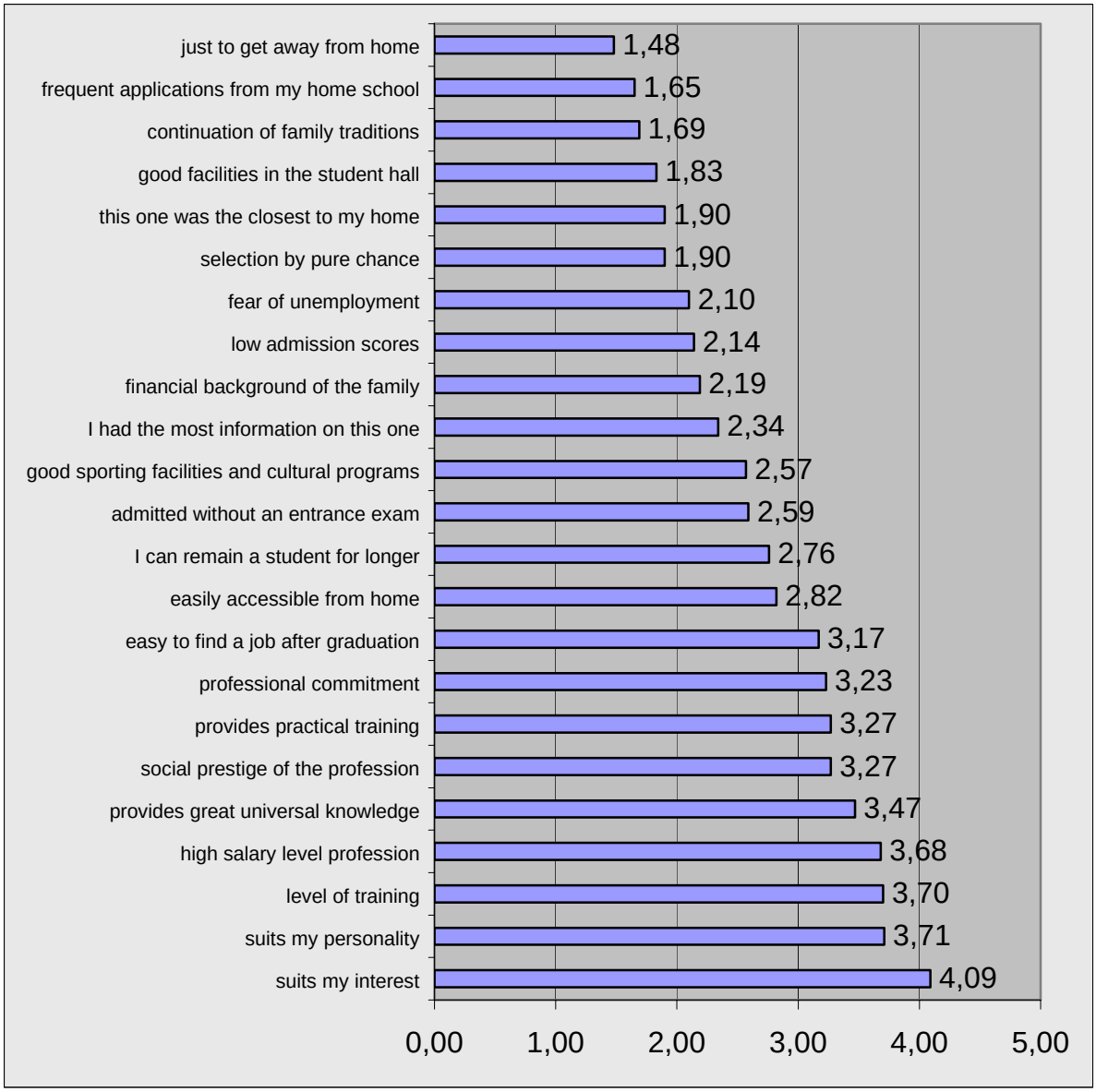

Figure 1: Factors determining the students' selection of university and major applying for full-time enrollment (Legend: 0 – irrelevant; 5 – very important)

The ***next question*** aimed at finding out which conditions of the ones listed the respondents considered important when applying to an institution of higher education. The mean scores of full-time students

are given as an illustration below. (Figure 1) The deviation of mean scores – as usual – is high and ranges between 0.9 and 1.3.

Based on Figure 1, students applying for full-time enrollment consciously choose their institutions of higher education and consider their interests, personalities, the level of education at the institution and even think about their future as they mostly target professions with high salary prospects. The above statement is supported by the fact that such external factors like "just to get away from home," "a lot of other students from my school have applied to this institution," "continuation of a family tradition," "this one was the closest to my home" were among the least important among those determining the respondents' selection.

The method of analysis of variance was employed to study the deviances between the responses of full-time and correspondence students. Certain significant differences were found among the deviances. Student hall facilities or university sporting facilities and cultural programs were given little significance by correspondence students. It is quite understandable as they normally study while at work and therefore spend little time at the institution.

Source of information

We have conducted a factor analysis of the information sources influencing the respondents' selections. The information factors listed below (Table 3) account for 59.9 percent of all deviances.

Table 3: Rotated factor matrix

	F1 Media factor Weight: 15%	F2 Traditional factor Weight: 12%	F3 E-factor Weight: 12%	F4 Institution factor Weight: 11%	F5 Individual environment factor Weight: 8%
Television	0.905				
Radio	0.900				
Newspapers, periodicals	0.363				
Parents		0.723			
Information sessions of the universities held at secondary schools		0.650			
Secondary-school teachers		0.625			
Home pages of faculties and universities			0.868		
Other Internet source			0.844		
Information booklet of higher education				0.705	
University information fliers				0.614	
Open day				0.510	
Career center				0.482	
Fellow students, friends					0.881

The media weighs 15 percent while the traditional family and school sources account for 12 percent of all factors. With respect to the sources of information, the Internet is becoming more dominant as a result, although still about on par with the traditional information sources. The institution's means (information sheets, fliers, open day) and the career center represent another 11 percent combined. Interestingly, fellow students and friends are considered a separate factor and account for as much as 8 percent of the total.

Of all the respondents, 86 percent ranked the amount of enrollment information provided sufficient, yet only 57 percent of them submitted their applications during the last week of the enrollment period.

An assessment of the characteristics of competitor institutions

Based on our prior experience, the leadership of the Faculty considers the similar faculties of three institutions as competitors. Let us mark the university in Budapest with "A," the college in Budapest with "B," and the university in the country with "C."
The respondents characterized the institutions with the qualities below: good theoretical training, good practical training, easy to get in, easy to complete, provides good job opportunities after graduation, has a high prestige, internationally renowned, good standard of foreign language education.
The answers are tallied in the following table (Table 4).

Table 4: The number of "yes" responses to the qualities

Qualities	Competitor "A"	Competitor "B"	Competitor "C"
Good theoretical training	81 %	48 %	37 %
Good practical training	36 %	60 %	30 %
Easy to get in	4 %	20 %	47 %
Easy to complete	15 %	20 %	34 %
Provides good job opportunities after graduation	72 %	61 %	30 %
Has a high prestige	84 %	44 %	32 %
Internationally renowned	73 %	30 %	23 %
Good standard of foreign language education	30 %	45 %	23 %

Based on the above, the respondents characterized the university in Budapest ("A") with the following qualities: the university provides good theoretical training, it is easy to find a job with a degree from there, the institution has a high level of prestige and is internationally renowned.
The training program of the college in Budapest ("B") is practice-oriented and provides good job opportunities after graduation.
The university in the country ("C") was assessed by far fewer respondents and no outstanding qualities were noted. However, many thought that it is easy to get in but provided less satisfactory theoretical and practical training.

The order of application

The system of Hungarian higher education has been undergoing a continuous change over the past years (unification of credit system, creation of specialist class system, dual level maturation (secondary school) exams). Currently students are allowed to submit applications to as many institutions as they wish but they are required to rank the selected institutions or majors. Students normally designate 2 to 4 institutions on their forms.

The competitive environment, therefore, may also be analyzed on the basis of application preferences, i.e. by sorting out the students designating Szent István University as their first choice and then examining their second options.

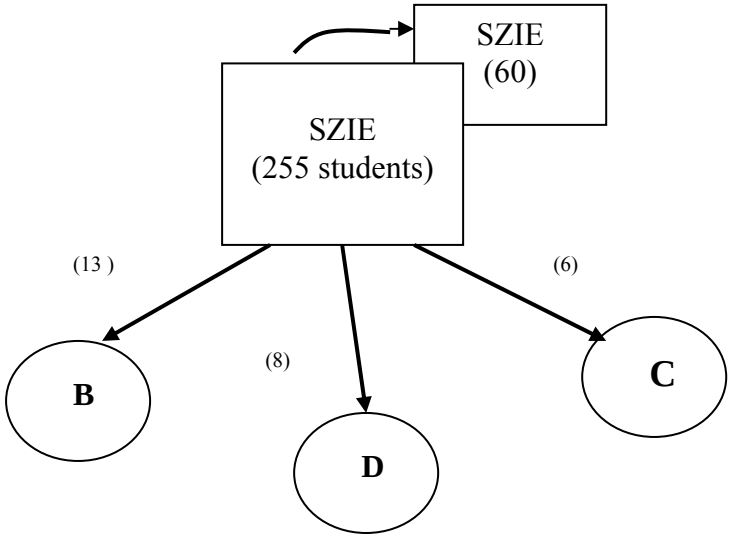

Figure 2: The order of application (Legends: "SZIE" – Szent István University, "B" – competitor college in Budapest, "C" – competitor university in the country, "D" – a new college in the country)

Figure 2 reveals that 255 of the respondents designated Szent István University as their first choice and 60 of them listed the same institution as their second option.
The competitor institution "A" does not appear second on the respondents' list (presumably students expected higher admission scores). A small number of the respondents listed competitors "B" and "C" as their second options and a new college in the countryside also appeared among the options, which did not used to be considered as a competitor of Szent István University. Another interesting point is the wide range of deviations among the second choices: in addition to the ones above, a large number of other institutions were also listed second, but typically by only 1 or 2 students.

3 Conclusions

The research has confirmed our previous assumption that there are visible correlations in the background of students' selection of institutions, majors and classes. Institutions of higher educations must definitely consider these correlations for the successful operations when attempting to win over secondary school students with high level of knowledge and when formulating enrollment strategies.

The following key correlations are visible in the motivation of secondary school students when selecting institutions of higher education:

- The most relevant factors influencing a student's decision for a particular university, major or class were as follows: interest, personality, level of training, high salary levels of the given profession, wide range of universal knowledge.
- The least significant factors are the students' intention to get away from home, the continuation of family traditions, good facilities in student halls, frequent application from the student's home school and accidental selection.
- The Internet is gaining a more prominent role in the institution selection process. According to a factor analysis, of all the information sources influencing the students' selection the factor of media tools, the traditional factor, the e-factor, the institution factor and the community factor together account for 59.9 percent of all deviances within the sample.
- The ranking of institutions on the application form and the number of colleges listed thereon are important elements of the enrollment strategy.

- Students enrolling in full-time (normally state-financed) and correspondence (paid on their own) programs statistically differ in their motivation of institution selection as well as family and social backgrounds.

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Tree identification in a virtual learning environment

Mary Forrest and Tom Moore

Dept. Crop Science, Horticulture and Forestry, Agriculture and Food Science Building, University College Dublin, Belfield, Dublin 4, Ireland

mary.forrest@ucd.ie

Abstract

For an undergraduate student becoming familiar with the range of trees used in present day landscape schemes in rural and urban areas can be a challenge. For the teacher the challenge is to convey the dynamic nature of trees, their alteration in size and appearance over their lifetime and their annual cycle of new leaves, flowers and fruit. Visits to an arboretum throughout the year are perhaps the best solution, but an arboretum may not be readily accessible and for much of the academic year deciduous trees are not in leaf. A web based site with images of trees in various stages of development and in various locations provides a useful alternative.

Virtual Learning Environments facilitate the creation and management of on-line courses. Education technologists describe three site structures, Support model, with homepage, and support material such as lecture notes and exercises; Content and support model with homepage, lecture notes, on line tutorials, notes and exercises. Integrated model with homepage, full lecture notes, and notes, simulation or examples and exercises, and evaluation and assessment. The site developed by the authors is following the support model.

The web site was designed with a home page and hyperlinks to web pages concerning tree identification (23 genera), design with trees and tree management. Digital images of trees in urban areas and scanned 35mm slides from the Departmental collection were saved as jpegs, edited and uploaded to the web site. Background colour and tables were incorporated as a framework for images and text. The site has expanded from 224 files of images and text (15 megabytes) in March 2002 to 428 files (24 megabytes) in August 2004.

The site www.ucd.ie/~plantmat can be accessed by students at any time from a networked university computer or remotely. It is a support for learning primarily in the subject Plant Materials but also in other landscape courses. It was also used for a time-tabled lecture ‘Identification of winter buds’. Students were given 14 specimens of dormant shoots from trees growing on Campus which they had already examined in leaf earlier in the academic year. A lecturer and a technician were on hand to assist the students and they also helped one another. Students successfully identified the specimens.

At the end of semester 20 students from 3rd Landscape Horticulture who had taken a course in Plant Materials were asked about the web site. The following procedure for a Student Consultation Meeting was used comprising three stages, individual work stage, group work stage and plenary stage. The process took about 60 minutes and was facilitated by the authors. The positive points were, ‘easy to follow,’ ‘very well presented’, ‘level of information satisfactory’, ‘images which could be saved on to disks’ ‘better than other sites’ and ‘expand the web pages’ The negative points were ‘books have more information ’difficult to follow’, ‘more pictures, text and information desirable’ ‘quality of some images poor’. The comments made in February 2004 were broadly similar to those made by those completing the same course in March 2003.

A statistical web counter Nedstat was incorporated on the site in July 2003. From 17 July 2003 to 3 August 2004 there were 198 visits to the site with the greatest number on 12th February 2004 when the site was used for a time-tabled class. While 91 % of the page views were from Ireland, 7 % were from the U.K. 1.5 % from Belgium and 0.5% from Norway.

1 Introduction

For an undergraduate student becoming familiar with the range of trees used in present day landscape schemes in rural and urban areas can be a challenge. For the teacher the challenge is to convey the dynamic nature of trees, their alteration in size and appearance over their lifetime and their annual cycle of new leaves, flowers and fruit. Visits to an arboretum throughout the year are perhaps the best solution, but an arboretum may not be readily accessible and for much of the academic year deciduous trees are not in leaf. A web based site with images of trees in various stages of development and in various locations provides a useful alternative.

Among the strengths of computer based education are the opportunity to consult course material at a time convenient to the student and the provision of variety in course delivery thus promoting positive attitudes to learning. Weaknesses include lack of interaction between the student and the teacher and technical limitations such as computer power or operating system (Forsyth, 1996).

Web based learning has been used in agricultural education. For example web based case study modules in agriculture developed as part of the Socrates Minerva project, (www.webcase-online.info) the focus of a workshop at this conference. Cooke et al (2002) discuss the use of the web to design, develop and describe the use of a site www.ecifm.rdg.ac.uk relating to environmental issues and farm management.

While no examples of web based teaching or learning in horticultural education has been found, web sites concerning tree identification and tree selection are available. In particular a site developed by the Dept. of Horticulture and Crop Science at Ohio State University www.plantfacts.osu.edu which provides images and cultural details of some 200 tree species and shrubs. The Royal Horticultural Society, London, maintains an extensive web-site (www.rhs.org.uk) including a section concerning plant selection. Users complete a search form and a series of plant names, with links to datasheets, is presented on the computer screen. A Forestry Compendium, (www.cabicompendium.org/fc) developed by CABI, lists 22,000 woody species and provides 1,200 datasheets about trees worldwide. Like the previous site it can be searched for tree selection. It is accessible on payment of a subscription.

2 Virtual Learning Environment

Virtual Learning Environments facilitate the creation and management of on-line courses. Education technologists describe three site structures, Jennings, D. (Lecture Feb 2002).
Support model, with homepage, and support material such as lecture notes, and exercises;
Content and support model with homepage, lecture notes, on line tutorials, notes and exercises. More time would be spent on the computer than in the previous model;
Integrated model with homepage, full lecture notes, and notes, simulation or examples and exercises, and evaluation and assessment. Such a model would be used in distance learning where all contact with the lecturer and fellow students would be via computer.
The site developed by the authors is following the support model.

3 Design of web site

The web site was designed with a home page and hyperlinks to web pages concerning tree identification, design with trees and tree management. The Department has an extensive collection of 35mm slides of trees, taken on the campus, in urban and rural parts of Ireland and in other countries. These were scanned and together with digital images of trees in cultivation on campus were saved as jpegs, edited and uploaded to the web site. Background colour and tables were incorporated as a framework for images and text. The site has expanded from 224 files of images and text (15 megabytes) in March 2002 to 428 files (24 megabytes) in August 2004. With regard to tree identification images of 23 genera and 63 species and cultivars of trees common in urban and rural

areas are available on the site. The site www.ucd.ie/~plantmat can be accessed by students at any time from a networked university computer or remotely.

4 Use of the site in class

The web site is a support for learning primarily in the subject Plant Materials but also in the arboricultural sections of the course Landscape Management, courses taken by undergraduates of Landscape Architecture and Horticultural Science. It is used in association with lecture notes, field visits, and practical identification classes.

In the past academic year a dedicated 'section' of digital images and text of 'winter buds' of 15 genera was added to the site to assist students to identify trees during the dormant season. Rather using a teaching laboratory a computer laboratory was used for a class 'Identification of winter buds'. Students were given 14 specimens of dormant shoots from trees growing on Campus which they had already examined in leaf earlier in the academic year. A lecturer and a technician were on hand to assist the students. They also helped one another, a form of learner-learner interaction. Students successfully identified the specimens. At an end year practical examination taken by 18 students comprising specimens of trees and shrubs examined during the course, 78% were able to distinguish leafless shoots of *Betula* from those of *Fraxinus* and 83% recognised *Aesculus hippocastanum*.

5 Course evaluation

At the end of semester 20 students from 3rd Landscape Horticulture who had taken a course in Plant Materials were asked about the web site.

The following procedure for a Student Consultation Meeting was used. (Wisdom James Lecture 14 Nov 2003 *Developing Course Evaluation Mechanisms*)

Individual work stage

Positive Points
What elements worked well, What should be retained
Negative Points
What aspects have been unsuccessful? Do you have positive recommendations for change?

Group work stage

Students were placed in groups of three or four people. A speaker and note taker was selected. The notes prepared in the individual stage were compared and common point or most important points were agreed and listed in priority.

Plenary Stage

One point was requested from each group and this was tested against other groups. In turn each group was asked to make a point until each group had added a point which in turn had been tested against the other groups. Then individuals were asked to make their own additional comments.

The process took about 60 minutes and was facilitated by the authors. The positive points were, 'easy to follow,' 'very well presented', 'level of information satisfactory', 'images which could be saved on to disks' 'better than other sites' and 'expand the web pages' The negative points were 'books have more information 'difficult to follow', 'more pictures, text and information desirable' 'quality of some images poor'. The comments made in February 2004 were broadly similar to those made by those completing the same course in March 2003. In response to the students' comments, the web site is not intended to replace books, rather it is focusing on images of trees which are not be readily available in textbooks and reference books. While the addition of more information is desirable,

consideration of copyright and the issue of electronic scrolling must be borne in mind. The quality of some images is an issue, while some image are satisfactory as 35mm slides, once they have been scanned, saved as jpegs, uploaded, compressed and viewed on monitors of varying resolution the quality has diminished. The authors continue to take 35mm slides and digital images, replacing some poorer quality images and expanding the site.

Web Counter

A statistical web counter Nedstat was incorporated on the site in July 2003. From 17 July 2003 to 3 August 2004 198 visits were made to the site with the greatest number on 12th February 2004 when the site was used for a time-tabled class. While 91 % of the page views were from Ireland, 7 % were from the U.K. 1.5 % from Belgium and 0.5% from Norway.

6 Conclusion

This would have been the first web based formal learning situation for the students. Students were familiar with the Internet and had been introduced to the site some students having accessed it in their 2nd year. The site is valuable as a source of reference for self- paced learning. The site has potential for use in particular topics within landscape courses.

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Student perceptions and use of a new managed learning environment at the University of Plymouth

Robert J. Williams[1]; Sally Wilks[2]; Matthew Newcombe[2]

[1]Faculty of Land, Food & Leisure, [2]Learning Support Advice Centre, University of Plymouth, UK

rjwilliams@plymouth.ac.uk

Abstract

A collaborative computing environment to support academic and administrative activities on the University of Plymouth's main sites has been developed using Microsoft Exchange Server. Excellent support for web access in Exchange 2000 has made it possible to provide the majority of staff and student e-delivery/e-learning needs via a customised web interface. This customised Outlook Web Access has become the University's Student Portal to a managed learning environment without the need for other course management systems.

A demonstration of the student portal will show the main features and how the interface has been designed to be easy to use and navigate as well as being accessible to all students. The demonstration will show how a student's personal collaborative tools - email, calendar, contacts, folders etc. - integrate with their e-learning area for delivery of module specific learning support materials and information. This paper evaluates the author's initial experience of using this new managed learning environment with a group of 108 first year, undergraduate students taking a foundation accounting module.
The students' use of the portal was tracked throughout the autumn semester and over the Christmas vacation, to evaluate student access. This showed some interesting insights into student work patterns, study behaviour and the value to them of having internet access.

A questionnaire used to evaluate students' perceptions of having the module supported online provided some positive feedback. They found the portal easy to use in spite of varied prior Information Technology experience. However, there were some useful indicators of how the learning environment, and the way that it is used by staff, could be improved to meet their needs more effectively.

Useful comments from focus group evaluations related to the need for students to develop particular attitudes and approaches to study early on in their academic careers. As might be expected students whose personal situations were helped by having more flexible access to information were particularly impressed.

With care the implementation of a managed learning environment can lead to better student learning experiences and opportunities but it does need to take account of a range of issues relating to student expectations, study behaviour and access.

1 The University of Plymouth Managed Learning Environment

The University of Plymouth (UoP) has a declared mission to become a leading "e-university" in the 21st century. In pursuit of this mission and following a detailed evaluation of commercially available managed learning environments (MLEs), the university decided to develop its own MLE based on a collaborative computing environment used to support academic and administrative activities on the University's main sites, using Microsoft Exchange Server software. Excellent support for web access in Exchange 2000 has made it possible to provide the majority of staff and student e-delivery/e-learning needs via a customised web interface. This customised Outlook Web Access has become the

University's Student Portal to a managed learning environment which can be tailored to meet the many diverse institutional requirements.
A strong design focus was placed on the needs of both students and staff with the interface needing to be easy to use with clear, intuitive navigation. The web based Student Portal overlays the systems running behind it, and moving between these systems is seamless for the users. It was also designed to allow flexibility of delivery to the academics, many of whom would need to be encouraged to use the system. They could create the learning materials using standard and familiar software, which the students could then access through the Portal. By choosing to develop the Student Portal as a front end to the Exchange groupware system the university wanted to avoid the "One Size Fits All" limitations of standard MLEs which often "...insist on a uniform pedagogy" (Kuriloff 2001), and do not encourage individual approaches, thus constraining academic innovation and creativity.

2 Implementing the University of Plymouth Managed Learning Environment

To develop and learn about implementing the Student Portal it has been used by selected academic staff and students in several pilot trials across the institution since September 2001. The evaluation of the Student Portal in this pilot phase was vital to ensure that it met the needs of the stakeholders; the staff and students who used the system, and those who were involved at an institutional level. This process was considered essential to inform both the academic use of the system and the way forward for e-Learning at the University of Plymouth.
The focus of this paper is the use and evaluation of the Student Portal with a specific first year business management module during phase 1 pilots (Autumn semester 2001/2002) and experience with the Student Portal with this same module during phase 2 – embedding Student Portal use (Autumn semester 2002/2003).

2.1 - Piloting the Managed Learning Environment

The author decided to pilot the Student Portal with a first year, first semester business management module which is a core foundation accounting module taken by 17 diverse degree programmes. The module leant itself to being supported with an MLE due to the complex array of teaching, learning and assessment tasks that take place.

These include:

- Weekly lectures supported by directed study from a required textbook
- Practice multiple choice tests using Perception Question Mark software
- Two "real" multiple choice tests to encourage consistent study and early recognition of problems
- Teams of students playing a business simulation to provide a basis for problem based learning and exemplars that could be used in the teaching. This necessitated student teams submitting decisions and receiving results to a strict predetermined timetable.
- Students either individually or in teams seeking help and/or guidance from members of staff at "surgery sessions".
- Provision of spreadsheets for budgeting exercises
- Provision of Share Price data to show team performances
- Provision of inter-firm comparative data to aid business analysis
- Provision of example assignments to help the students produce their own individual business consultancy reports
- Provision of PowerPoint lecture materials prior to lectures

This is, therefore, a logistically complex module to organise to ensure that the students have the appropriate materials available to them at the right time, without them becoming overwhelmed with the sheer volume of learning resources.

2.2 - Evaluating the Managed Learning Environment

The main purpose of the evaluation of the Student Portal was "...to ensure it is meeting the needs of the stakeholders; the staff and students who are using the system and those who are involved at an institutional level (Wilks and Newcombe 2002). Feedback was needed about all aspects of the use of the system from academic staff, students and support staff. The evaluation methods included both qualitative and quantitative data collection.
An online Student Portal questionnaire was developed to evaluate design aspects including:

- navigability
- features
- accessibility
- the students' perception of the effects of the Student Portal on their learning

Student focus groups were also used to assess student reaction. A structured question methodology was used by two non teaching Learning Support Advisory team members, to ensure accurate recording of the students' comments. There were 5 key and two probe questions which all the students were asked. This allowed some discussion around topics of interest to the students and the facilitators when necessary.
The focus group used to evaluate this particular trial module contained an international and a partially deaf student who could both be expected to have requirements which the managed learning environment could help to fulfil.

Academic staff views of their experience of using the portal indicated the following benefits:

- ease of use for staff and allowing materials to be made available to students quickly in response to their requirements
- flexible and allows creativity and latitude in how it is used
- eases the management of the module teaching, learning and assessment logistics freeing up more time to spend constructively with students
- integrates seamlessly with other software e.g. Question Mark testing software; and web resources
- encourages students to develop more independent approaches to managing their own learning
- staff can also operate more effectively by being able to utilise the student portal from home
- allows students to develop employment related skills in working through the medium of information and communications technologies
- students being able to access materials from abroad during vacation periods or when timetable restrictions make it difficult for them to retake a module

Using log files that are automatically generated by the Exchange system, a process was designed to examine the student use of the system. This enabled staff to track the use of learning materials relative to the module teaching and assessment schedule**.** The log files show up some interesting insights into student use of the portal and in differences in learning behaviours between the first and second years of use of the portal.

These included:

- quicker access to and take up of their use of the portal in the second year of use for the module largely as a result of the students being registered on the allied student records system more quickly and because the value of the portal was demonstrated earlier in the module
- weekly usage patterns demonstrated that the use of the portal was greatest in the weeks when there was a test – often to access the online practice tests
- the most use was made of the portal on the day of lectures (year 1) when lectures started at 10.00 am but on the day before lectures (year 2) when lectures commenced at 9.00 am

- there was a greater use of practice tests in year 2 and an increase in use in the weeks when the practice tests were made available online
- in year 1 there was a much greater concentration in use between 9.00 and 5.00 pm when the students are most likely to have accessed materials from campus compared to year 2 when more students are accessing materials from their accommodation
- access ranges from 7.30 am to 11.30 pm with one case of access being sought at 5.00 am in year 1 of the trial!
- In year 1 the highest usage is between 2.00 and 3.00 pm whereas in year 2 the highest usage is between 5.00 and 6.00 pm
- evening use access peaks between 7.15 and 7.30 pm and then again between 9.30 and 9.45 pm. Where used at home it is likely that materials were downloaded to the student's computer hard drive to avoid excessive internet charges
- use could be clearly linked to key events in the teaching & learning schedule

This analysis would tend to indicate that in year 2 the students are adapting to using the portal as an aid to study more effectively than in the pilot year. It also suggests that more of these students have internet access from their home accommodation and are prepared to access information outside of the "normal" working day. This bodes well for developing this form of learning support for a much wider range of users and approaches to study.

3 Conclusions and Developments

The major conclusions that can be drawn from student evaluations are that:

- 24/7 and home access is highly valued
- access is considered easy and where there were problems it was due to slowness of access from home, though increasing numbers of students are now utilising broadband internet access
- the Student Portal is easy to navigate and use
- most used features are e-mail, module and student information, and library access
- least used features are help, calendar, tasks (to do lists) and faculty information
- it is overwhelmingly beneficial to have all features available in one place
- the Portal enhanced the learning experience and eased access of module materials
- students would like more modules to have information available via the Portal

There were many positive student comments but ease of access from home, having all information available in one place and having access to lecture materials before the lecture were often cited.... "best thing were that lecturers were putting materials online; made learning easier as PowerPoint slides were available from home; I could refer back to lecture materials; if I missed a lecture can refer back to it – revise materials."

The worst features were:

- sometimes access was slow from home
- sometimes the folder structure was confusing and it was difficult to find materials
- there is a need to have a system to alert students to the fact that there may be new materials in folders
- many said there "was no worst thing"
- one student suggested that it would help to have links to useful web sites shown

Developments in the 2nd phase have included addressing the issues raised under worst features above and making materials compliant with the needs of students with Special Educational Needs and Disabilities.

This includes:

- ensuring the folder names, structure and file names are clear and easy to navigate
- ensuring that materials are available to students in a timely fashion to meet their needs more effectively
- modifying the portal so that where unread materials are in folders the file name is emboldened and the number of unread items is shown
- making available a Module Links folder with links to supporting web pages
- modifying PowerPoint materials with a new template to ensure all materials are in a larger appropriate sans serif font (although, of course students have the facility to modify online materials to match their own diverse requirements)
- piloting the use of narrated PowerPoint lecture slides with notes for those with visual and/or hearing impediments
- piloting the use of voice-mail as an option in addition to e-mail
- Inserting digital pictures of staff in the contacts list to make it completely clear just who staff are and what they are called.

Additionally, having developed the use of the Portal for the submission and receipt of team business simulation decisions and results, the whole of the module learning support is now available via this "one stop" MLE.
Whilst the Student Portal is only in its second year of development the response from students to staff using the Student Portal is very encouraging. Developing media rich content with large file sizes needs to be restrained in view of the current restrictions placed on students without broadband internet access, although the evidence is that this will rapidly become more cost effective and widely available. Encouraging recalcitrant staff to develop their use of the Student Portal is coming from students having an increased expectation that staff will support their learning in this way.

Quite clearly the next 5 years will offer increasingly interesting opportunities to support online learning using this technology. However, it is important to remember that whatever developments take place, the pedagogy of learning should always be paramount in informing the way that it is both developed and used.

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DSH – The Danish Swedish horticultural science degree programme

Peter Braun

Royal Veterinary and Agricultural University (KVL), Dept. of Agricultural Sciences, Copenhagen, Denmark.
(Present address: Research Institute Geisenheim/University of Applied Sciences Wiesbaden, Germany)

braun@fa-gm.de

Abstract

This paper describes the development up to the start of the common degree programmes in horticulture between Denmark and Sweden, which started in autumn 2001. It describes the main characteristics of the programme, its development and problems and benefits of this truly transnational study programme. The decision for block courses, relatively large integrated courses and building teacher teams was taken to increase the quality of the study programme and turn it from national programmes given in local languages into an international programme in English.

1 Background

The Danish-Swedish Horticultural Science Degree Programme (DSH) is a transnational partnership between the Swedish Agricultural University (SLU) with its horticultural education located in Alnarp, Sweden, and the Royal Veterinary and Agricultural University (KVL) in Denmark with its horticultural education located in Copenhagen. Both universities had increasing problems recruiting a sufficiently high number of students to secure the study. As an example the development of the numbers of applied and actually started students at KVL is shown in Fig. 1. Although located relatively close to each other, the Oeresund part of the Baltic Sea put an effective stop to an extensive cooperation for many years. However, with the planning of a bridge connecting Copenhagen to Sweden, the ideas of a closer cooperation developed. NOVA, the Northern Veterinary and Agricultural University, a cooperation between all Scandinavian universities in the field of Agriculture and Veterinary Sciences in the form of a virtual university at PhD course level, formed ideas for an extensive cooperation in Scandinavia also at the undergraduate and graduate level. Horticulture was chosen as a test case, since the bridge would reduce travelling time between SLU and KVL campuses to about an hours drive. In May 1996 NOVA made the formal decision and in July 1996 the Norwegian Gustav Redalen was asked to produce a feasibility study. He finished his report in March 1997 already recommending large changes to the existing studies. The rectors of the two universities took over and made the formal decision to start DSH. It was thus a pure top-down approach which at this stage was handed over to the teacher level telling them to just do it but also allowing them to discuss and form the actual study programme. Once the process was in control of the teacher level, the interference of the leadership was little. In mid 1999 the decision on the structure of the study programme as well as on the courses given was taken allowing work on the courses to start.

2 The programme structure

The programme started in autumn 2001 with the 1st year of the Bachelor. The complete change in structure did not allow for old students to be moved over to the new programme. Instead the old study programme was phased out in parallel to the new one starting up. All elective courses are common Bachelor/ Master courses and 2/3 or the elective courses started in 2003/2004 and the remaining third starts in 2004/2005.

The programme structure is the 3 + 2 model with 3 years of BSc study and 2 years for the Master programme. In Sweden, the BSc/ MSc structure was not introduced yet, but Swedish students then had the chance to get the BSc degree from KVL.

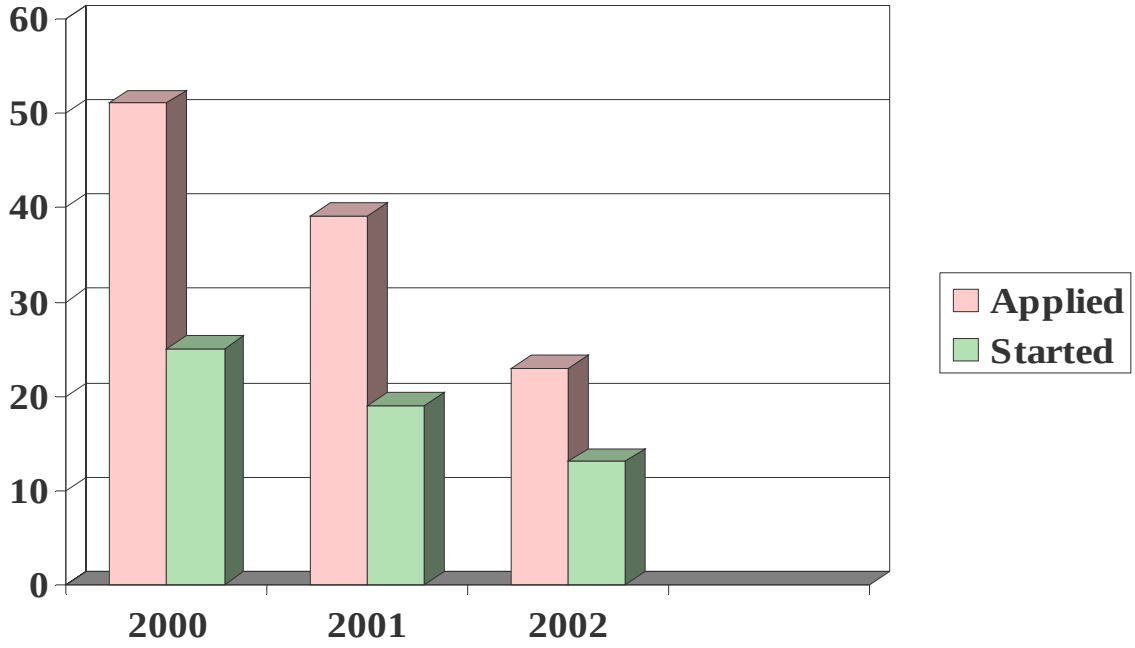

Figure 1: Number of potential students applying for the study programme and number of actually started students at KVL.

The first two years of the BSc study are obligatory The third year has 35 ECTS worth of course work in elective courses, which are totally free plus 15 ECTS for BSc thesis work.
The MSc has 75 ECTS of elective courses plus 45 ECTS for the MSc thesis. Both study programmes are in English from the first day.

The programme structure is characterized by large courses with teacher teams resulting in an integration on the teacher side and a considerably better communication between teachers. Students at the BSc level start with Horticulture and only thereafter go into the basic science courses. They are fully blocked modules with students only having one course at a time. An overview of subjects and structure is given in Fig. 2.

Students are enrolled at the respective university, i.e. formally studying, following the study rules and receiving their degree from this university. The actual teaching, however, is totally integrated and shared between the universities. Most courses have a Danish and a Swedish course responsible who then form the teacher team around them and organise the course.

3 Problems

Denmark and Sweden are both Scandinavian countries but their respective university culture and organisation is very different. But although the merging of the two cultures at teacher level sometimes was painful and difficult, it was achieved due to a very positive attitude on both sides. Everybody involved developed a new perspective during the process of organising the new courses. The resistance met by staff was mainly from teachers not directly or not at all involved in the programme. It really is an interesting fact, that the “back to the good old days” attitude was most prominently expressed by those who were involved the least. This still is the situation at both universities. However, the real problems turned out to be administrative in nature and were those left out during the setting-up phase. Here the input vs. income question is a major issue. Universities receive funding on

the basis of students enrolled at the respective university. Fig. 3 and 4 show the trend of student numbers for both universities. Whereas at KVL it was possible to turn the trend and get an overall increasing number of students, the negative trend at SLU continued. This probably was due to the fact that SLU did not had an internationally accepted and known BSc and MSc degree and thus could not attract international students, which KVL did. This resulted in an divergence between funding for students at the universities and teacher hours put into the courses. The actual distribution scheme and rules at the two universities further complicated the situation. Also, transport was still a problem since 1 hour by car does not mean 1 hour by public transport and depending on the connection students often had very long days. Last not least the development was hindered by the fact that too few are active driving motors of the development leaving large amounts of work for these few people.

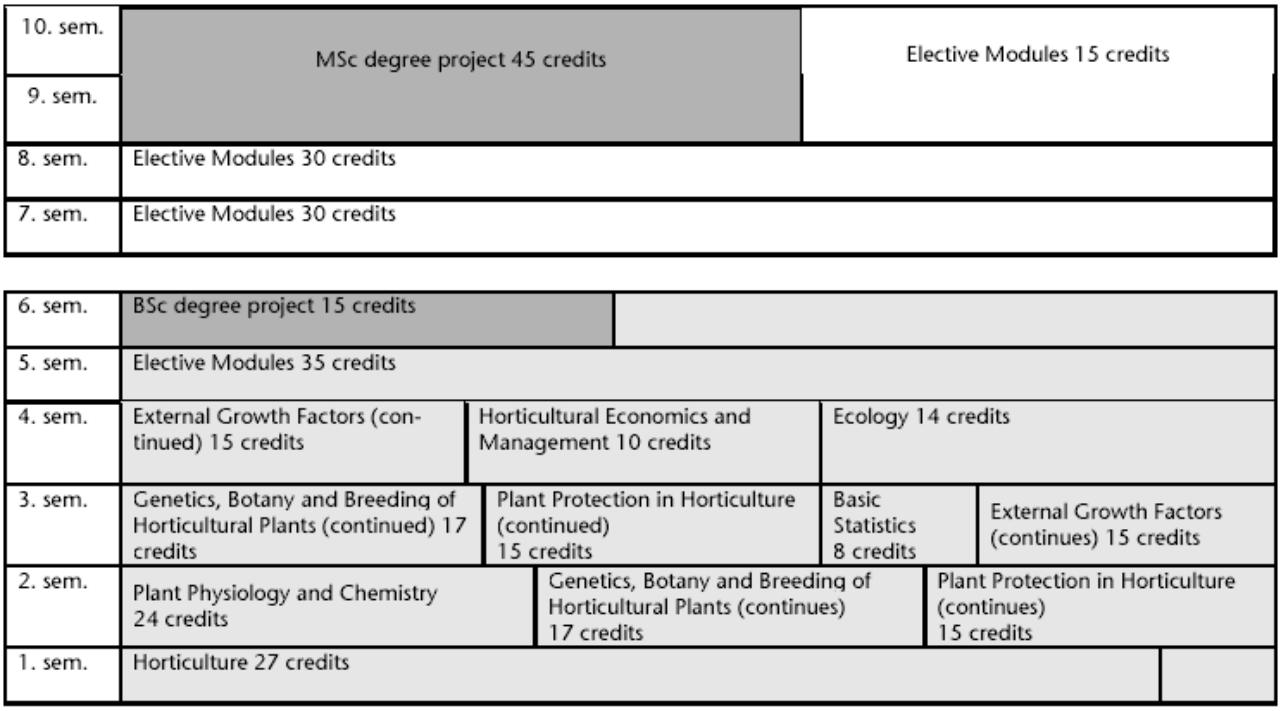

Figure 2: Structure of the BSc and MSc study programme in Horticulture for DSH

4 Benefits

The main benefit certainly is that a viable study is secured. Also, the quality of the whole study programme was considerably improved. New ideas from both sides, pushing teachers out of their normal routine into rethinking and discussing new ideas with partners who have a quite different experience and way of constructing courses was refreshing and resulted in this increase in quality. The larger teams and having two course responsibles resulted in an increased need for coordination but also in a better passing on of experience and a continuous development of the programme.
There is a clear potential for attracting students from other countries. However, as indicated before, this potential is mainly realized at KVL and not at SLU. It is also our view that we with the new structure get better students. They are more open, more active and better able to integrate between subjects than before. This is at least partly due to the fact that the focus is now more on the whole study rather than on individual courses. And the intensive involvement of the teachers also results in a very close contact to the students who feel at home in this study. At the moment of this ECHAE conference it is not clear how the future for DSH will be but the continuous decrease in student numbers at SLU certainly needs to be tackled and changed.

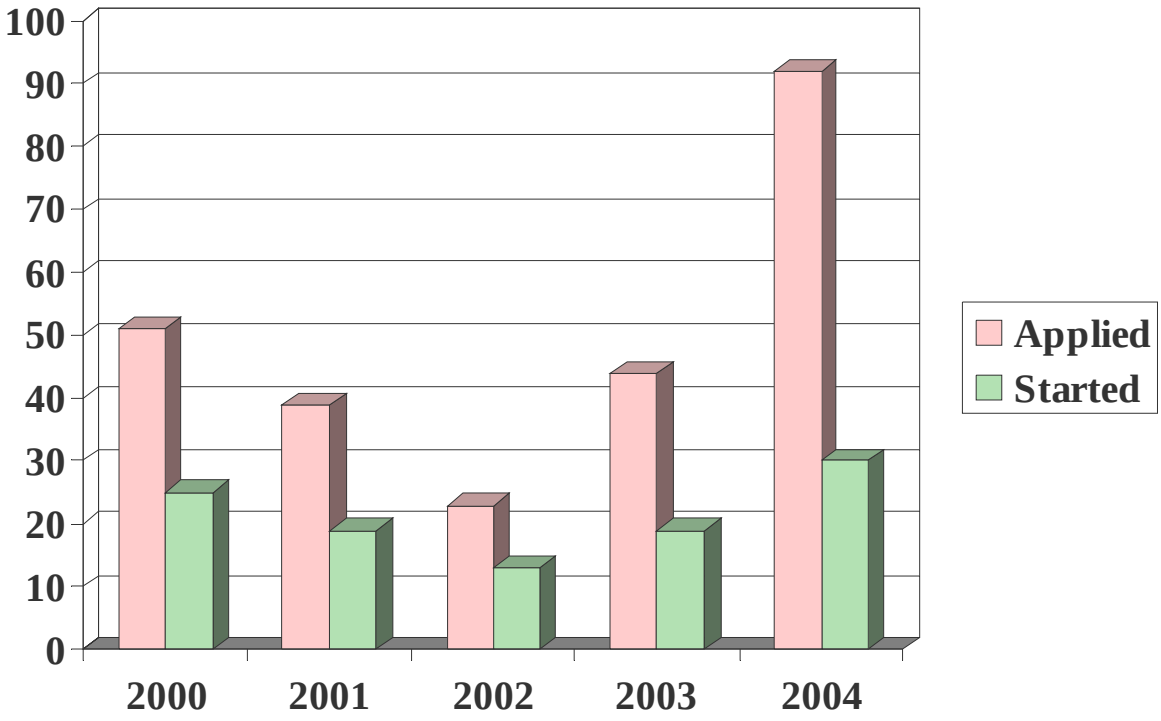

Figure 3: Number of potential students applying for the study programme and number of actually started students at KVL.

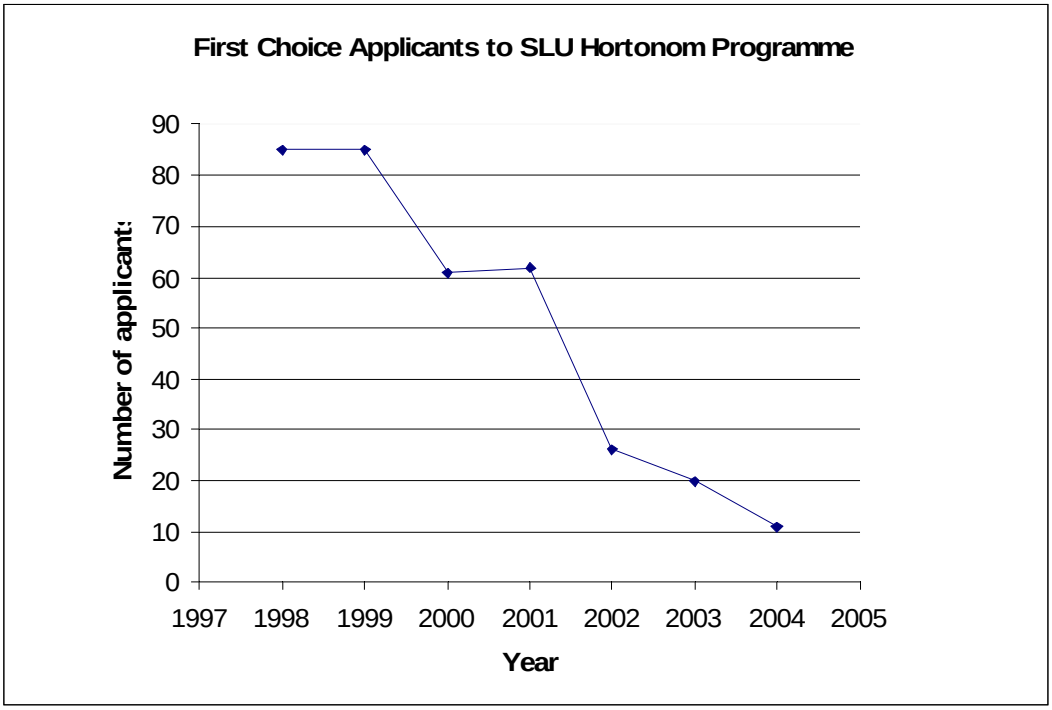

Figure 4: Number of potential students applying for the study programme at SLU.

Life-long Learning Courses in Hydrology on the CUA Prague

Pavel Kovar, Jan Hron and Jaromir Nemec

Czech University of Agriculture Prague, Prague 6 Suchdol, Czech Republic

kovar@fle.czu.cz

Abstract

The Faculty of Forestry and Environment of the Czech University of Agriculture (CUA) Prague offers MSc. courses in Forestry, Water and Landscape Management in English. These courses have a strong component of hydrology and water management. As their follow-up in a life-long learning the Faculty offers intensive six-week courses in advanced hydrological sciences. These courses are also taught in English and provide innovative and flexible curricula for both home and foreign students.

1 Introduction

During the last decades, the frequency of changing hydrological extremes - floods and droughts - is higher and the consequent problems are more urgent. The question is whether rainfall-runoff processes are of a more stochastic character or whether deterministic causality prevails. The explanation can be that both groups of main principles take part in sudden weather changes. However, to analyse hydrological events, to search for possible changes of global climate, to process hydrological data for water resources planning and management is a matter of thorough study. Such a study at CUA Prague is offered in English at three levels, MSc, PhD, and life-long courses.

2 MSc courses

New study programme of MSc Courses “Forestry, Water and Landscape Management” has been recently accredited and is given in Table 1.

The list of optional subjects:

Autumn semester

- Environmental Soil Physics
- Applied Hydraulics and Hydrology
- Water Supply and Sewage Systems
- Principles of Hydrological and Hydraulic Modelling
- Forest Management in Air Polluted Areas
- Special Forest Plantations
- Advanced Agrometeorology
- Soil Conservation and Protection

Spring semester

- Ground Water Flow and Contaminant Transport
- Hydro informatics
- Drainage Policy in Landscape
- Special Silviculture
- Physiology of Growth and Reproduction of Forest Trees
- Forest Ecology
- Soil, Water and Plant Relationship

Table 1: Study Programme for MSc in Forestry, Water and Landscape Management

First year						
	Obligatory	**Obligatory**	**Obligatory**	**Obligatory**	**Obligatory**	**Optional**
Autumn semester	Forest Ecology 6 ECTS Credits	Water Resources Management 6 ECTS Credits	Ecology and Ecological Methods 6 ECTS Credits	Landscape Ecological Applications 6 ECTS Credits	MSc Thesis 2 ECTS Credits	Optional Sub.1 (attached list of OS) 4-6 ECTS Credits
Spring semester	Soil Taxonomy, Survey and GIS 6 ECTS Credits	Silviculture 6 ECTS Credits	Forest Dendrology, Genetics and Tree Breeding 6 ECTS Credits	Classification of Vegetation 6 ECTS Credits	MSc Thesis 2 ECTS Credits	Optional Sub.1 (attached list of OS) 4-6 ECTS Credits

Second year						
	Obligatory	**Obligatory**	**Obligatory**	**Obligatory**	**Obligatory**	**Optional**
Autumn semester	Applied Hydrology and Hydraulics 6 ECTS Credits	Forest Management 6 ECTS Credits	GIS for Forest and Landscape Management 6 ECTS Credits	Logging and Wood Processing 6 ECTS Credits	MSc Thesis 2 ECTS Credits	Optional Sub.1 (attached list of OS) 4-6 ECTS Credits
Spring semester	Forest Enterprise Economics 6 ECTS Credits	Forest Protection 6 ECTS	MSc Thesis 14 ECTS Credits			Optional Sub.1 (attached list of OS) 4-6 ECTS Credits

3 PhD Courses

Water- oriented study on the PhD level at CUA Prague is running in three study programmes:

- Agricultural and Forest Hydrology
- Soil Protection and Water Reclamation
- Landscape and Applied Ecology

Czech and foreign postgraduates usually carry out some parts of their study programmes abroad (at least one semester). At the CUA Prague, the PhD students can, according to their thesis, study subjects to be selected according to their study plan (usually four to five subjects); however, research is a major activity.

4 Life-long Courses

Following the Bologna process, the sequence of BSc, MSc, and PhD courses is followed by life-long courses focused on hydrology and water resources management. The six-week training course titled "Hydrological Data for Water Resources Planning", taught in English, is organised every even-numbered year under the sponsorship of the Czech Ministry of Education, UNESCO and WMO. It is designed for those specialists in hydrology who desire to update their knowledge on monitoring, processing and use of hydrological data. The course is split to three parts: basic knowledge, topical

group work and field trips. Lecturers are recruited from three Czech Universities: CUA Prague, Charles University and Czech Technical University. Invited guest -lecturers from EU universities deliver special lectures and exercises. Participants apply for the course through a brochure-inserted application form or through the web-site and they are selected by the CUA Committee. They usually come from the Czech Republic, Central and Eastern Europe and some come from "third countries" (Asia and Africa). The Consortium of two departments of the Faculty (Department of Water Resources, Department of Land Use and Improvement) nominate the Advisory Council which regularly evaluates each Course through participant / teacher evaluation papers since the early 1990´s. The Advisory Council has evaluated a need for permanent consideration of the curriculum as follows:

i. the curriculum, with respect to scientific subjects (lectures) offered;
ii. teaching/learning methodology;
iii. facilities available to the participants.

In the evaluation, views were also expressed with respect to the duration of the course, also in connection with the financial support available at national and international level, not only to this course, but to similar courses in the world, in general.

i. The prevailing opinions, with respect to the curriculum, agreed that the course should, in addition to providing up-to-date basic and general knowledge of hydrology, be oriented topically toward a few of the most important European problems.

ii. Pedagogical methodology should be oriented in the following directions:
- Provide more tutoring in aspects needed by different individual participants. Tutoring in small groups working together has been suggested.
- Provide information on the content of different parts of the curriculum before the arrival of accepted participants so that they can select ā la carte group work in those professional directions which they consider most useful for them. In this way they can already begin preparations in these areas at home.
- Increase the amount of hands-outs on training activities during the course and when possible, preferably oriented towards the solution of problems for which input data would be brought by the participants from their respective countries.

iii. The participants should indicate, before their arrival, the level of their computer skills. The organisers would thus be in a better position to plan the relevant facilities used in teaching.

Building on these conclusions of the evaluation, the organisation of the courses is designed according to the following concept:

Part I

This part will be an update of the basic knowledge (BC) in hydrological and related sciences and a check-up of mathematical and other exact science capabilities.

Part II

This part will consist of three topical Group Works (GW):
GW1. River Hydrology, Floods and their Forecasting
GW2. Environmental and Landscape Hydrology
GW3. Use of Hydro informatics and Data Collection and Processing
All group works would be composed of lectures and hands-on practice with individual tutoring, following the curriculum below.

Table 2: The Course Curriculum

Subject, Part	**Number of contact hours**
Part I: Basic knowledge	84
1. Elements of Hydrology and Hydraulics	20
2. Use of Statistical Mathematics in Hydrology	12
3. Elements of Meteorology and Hydrometeorology	10
4. Hydro meteorological Instrument and Networks	10
5. Elements of Hydropedology and Hydrogeology	18
6. Evapotranspiration	8
7. Hydrological Maps and use of GIS	6
Part II: Topical Group Works (in average)	50
GW1: River Hydrology, Floods and their Forecasting	26
1. Flood Hydrographs and Routing	6
2. Rainfall-Runoff and Routing Models	8
3. Reservoirs and Water Management	6
4. Forecasting and Warning Systems	6
GW2: Environmental and Landscape Hydrology	24
1. Modelling of Hydrological Processes	10
2. Water Balance Catchment Models	4
3. Environmental Impact on Water Management	6
4. Climate Change and Water Resources	4
GW3: Use of Hydro informatics and Data Collection and Processing	24
1. Hydro informatics	8
2. Application of Remote Sensing and Telecommunication Systems	6
3. Computerized Data Processing	6
4. Use of Isotopes in Hydrology	4
Part III	
Visits, Study Tours, Exams	30

Part III

Visits, Field Trips (FT) and Exams (E)

The time schedule of the course would be:

Part BC: 2.5 weeks
Part GW: 2.5 weeks
Part V, FT & E: 1 week
1 week = 25-30 contact hours

Participants may choose the GW according to their own consideration.

Subjects in the curriculum will be:

BC:

1. Elements of hydrology and hydraulics
2. Use of statistical mathematics in hydrology
3. Elements of meteorology and hydrometeorology
4. Hydrological and meteorological instruments and networks
5. Elements of hydropedology and hydrogeology
6. Evapotranspiration
7. Hydrological maps and use of GIS

GW1:
1. Flood hydrographs and routing
2. Rainfall-runoff and routing models
3. Reservoirs and water management
4. Forecasting and warning systems

GW2:
1. Modelling of hydrological processes
2. Water balance catchment models
3. Environmental impact on water resources management
4. Climate change and water resources

GW3:
1. Hydro informatics
2. Application of remote sensing and telecommunication systems and their impact on hydrological data systems
3. Computerized data processing
4. Use of isotopes in hydrology

5 Innovation of the teaching / learning process

After running 18 these life-long hydrological courses with more than 250 graduates, each course has brought new demands for innovations. Now, following the development of using mathematical models in hydrology and the rapid development in visual computational technology, some new visual applications are being prepared for each course GW as follows:

1.1 GW1: RIVER HYDROLOGY, FLOODS, FORECASTING
(Use of Visual Basic for Applications-VBA):
- Chézy formula, steady uniform flow, channel flow, spillways
- Non-uniform flow, weirs, steps, natural obstacles
- Non-steady flow, simple explicit scheme (KINFIL model), implicit scheme (AQUALOGIC system)
- Case Study on river channel – inundation valley/plane, modelling using HEC-RAS, model, ver.3.0 (implementing GIS-DTM)
- Case study on flood models (KINFIL, MIKE, AQUALOGIC system)

1.2 GW2: ENVIRONMENTAL HYDROLOGY
(Use of Visual Basic for Applications-VBA):
- Rainfall - Runoff models (linear, non-linear schemes)
- Routing models (reservoir types, river-reach types)
- Conceptual models (event models, long-term models)
- Water balance models (w.b. components, models of draughts)
- Rehabilitation of small rivers
- Water erosion models

1.3 GW3: DATA COLLECTION AND PROCESSING
Use of Visual Basic for Applications-VBA):
- Measuring instruments (rainfall, water stages, hydrometry, g.w. tables, etc.)
- Sampling instruments (water, soils)
- Monitoring boreholes and wells
- Data collection principles (systems, archive, data retrieval)
- Data processing methods:
  - Statistical methods - Deterministic models - (Stochastic models)

6 Conclusions

The CUA Prague life-long hydrology courses reflect the development of integrated water resource management in Europe. After the accession of the Czech Republic to EU, the CUA is determined to strengthen the courses. The EU Commission on Education within the Socrates/Erasmus intensive courses will hopefully incorporate the CUA courses in its network of European training facilities in the water sector. CUA is operating in a European spirit appreciating a broader co-operation of other European universities and it is definitely willing to contribute to the European life-long educational programmes.

University teachers' competence and their development

Milan Slavik

Czech University of Agriculture Prague, Institute of Education and Communication, Prague 5, Czech Republic

Slavik@chuchle.czu.cz

Abstract:

The concept of 'competency' has been developed recently as a holistic term for the knowledge, skills and attitudes required in a good educator. Seven types of necessary competences are defined. Competency is required in a variety of tasks carried out by the educator. The identification of these competences is of importance and value to trainee educators, their trainers, and to the practising educator during a professional career. Professional competence is quite often overrated by university academics. This paper describes the importance of other aspects such as communicative, managerial, diagnostic and other competences of the university teacher for the global development of the student and subsequently the successful graduate. A small-scale study shows that the students expect not only the highest level of professional knowledge of the university teacher but also the same high level of pedagogical, personal and general human qualities. A proposal for the systematic training of University academics in the field of professional and personal development is designed, and experience and examples from other European Universities are mentioned.

1 Introduction

Throughout most of the 20th century, the concepts of education were based on acquiring knowledge, skills and attitudes. Knowledge was described in the curriculum, syllabus and module. Attitudes were generally those pre-dispositions, which were most helpful to increase socialisation within human relationships and society. More recently, attention has turned to identifying competences as an outcome of educational processes. The skills were both psycho-motory (the ability to perform manual tasks) and intellectual (the ability to think logically and to analyse, synthesise and evaluate).

Competency is defined in this paper as the ability to perform or carry out defined tasks in a particular context, at a high level of excellence. It describes action, and demands that this is of a very high standard. In practice, competency unites knowledge, skills and attitudes into a statement of what an individual or a class of individuals who constitute a category (such novices at work) or a profession (such as a teacher of various subjects) can do and is expected to do in a particular situation. The term can be applied to a range of levels of competency such as from a novice to an expert, and to situations, which range from routine tasks to creative and highly responsible decisions or plans.

It is evident that a high level of competency is essential if educators are to be most helpful to students and, indirectly, to the development of an efficient work force. The implications are two. First, an effective system of training is required to develop the necessary basic level of competency of educators, and assist the growth of competency during a professional career. Second, and more fundamental, is the need for a mechanism to identify competency and give an assurance of what can be expected from it.

2 Competences towards Professional Standard

The development of competences continuously leads towards the formation of professional standard. The complex of pedagogical competences can be divided into the following categories:

Discipline and subject competence: An educator -

- Has mastered a systematic body of knowledge within a specialisation to an appropriate scope and depth
- Is able to apply practical experience in the area of specialisation to the educational content of the subject of study.
- Is able to transform knowledge of the respective scientific and technical disciplines into the educational content of the subject of study.
- Is able to integrate inter-disciplinary knowledge with the subject of study and create inter-subject links.
- Is able to identify and process information in the field of specialisation, and has user skills in the field of information and communication technology (ICT).

General educational competence: An educator -

- Has mastered the processes and conditions of education at secondary vocational schools (secondary apprentice training centres) on both theoretical and practical levels, combined with a deep knowledge of psychological, social and multicultural aspects.
- Is able to use the context of education and understands the educational systems and the trends in their development in relation to the system of vocational education in particular.
- Is able to support the development of individual qualities in the students within their field of interest and vocation.
- Has knowledge of the rights of a child and student and respects them in educational work.
- Has a high level of creativity, flexibility and adaptability for the education process.

Educational (didactic) competence: An educator -

- Is able to transform the methodology of knowledge of the given discipline into the way of thinking of students within the given subject of study.
- Is able to choose the most suitable methods, forms and aids for the teaching process with regard to educational goals.
- Is able to use Information and Communication Technologies for the teaching process and for the support of students' learning.
- Is able to lead students towards self-responsible learning.

Diagnostic and intervention competence: An educator -

- Is able to use the methods of educational diagnosis in teaching on the basis of a knowledge of the individual prerequisites of students and their developmental specificities, and is able to diagnose social relations in the class.
- Is able to identify students with specific learning and behaviour disorders and to tailor the selection of the subject matter and teaching methods to their capabilities.
- Has mastered the methods of giving guidance to gifted students.
- Is able to recognize in students social pathological manifestations such as bullying and battering, and knows the possibilities for their prevention and remedy which he can apply.
- Has a good command of methods for ensuring discipline in the class and is able to solve educational situations and educational problems at school.

Social and communicative competence: An educator -

- Has mastered the means of creating a favourable working environment (teaching climate) in class/at school on the basis of knowledge of the social relations among students.
- Has mastered the means of professional socialisation of students and is able to apply them in practice.
- Is able to handle demanding social situations at school and outside the school and is able to help students.

- Knows the possibilities and limits of the impact of out-of-school environment, peers and media on students, and is able to analyse the causes of negative attitudes and behaviour of students and to use corrective measures.
- Has mastered the means of communication in education in the class/school.
- Is able to apply efficient methods of communication and cooperation with parents and social partners of the school, and is familiar with the issues of family education.

Management and legislation competence: An educator -

- Has a basic knowledge of the legislation and other regulations and documents related to the performance of his profession, his environment and the profession/employment for which he prepares students and is able to use them in instructional practice.
- Is familiar with educational policy, has a good knowledge of the conditions and processes of functioning of a school.
- Is familiar with administrative work related to keeping records of students and their educational results, and is familiar with record keeping and reporting.
- Is able to develop projects on the level of an institutional cooperation, both domestic and international

Professional and personality cultivating competence: An educator -

- Has a general grasp of educational issues in philosophical, cultural, political, legal and economic fields, and is able to apply them to shape attitudes and value orientations of students.
- Is able to represent his profession on the basic of mastering the principles of professional ethics, and has mastered the patterns of professional behaviour.
- Has the necessary personality prerequisite for cooperation with colleagues and other members of educational staff.
- Is capable of self-reflection on the basis of self-assessment and evaluation, using different entities.
- Has physical resistance and physical fitness.
- Has moral integrity.

3 Staff development

The Department of Education at the Czech University of Agriculture (CUA) is the oldest educational institution of its kind in the Czech Republic. It has been training teachers of vocational subjects for agricultural, forestry, food processing, veterinary and horticultural secondary schools for more than seventy years. Of course, there were various developing stages. It was founded as a "State pedagogical seminar for candidates of teaching at agricultural schools" in the 1930 in Prague and later changed its location around different places in the country until the year 1964, when it was incorporated into the Agricultural University as an independent Department of Education. Nowadays it functions as a teaching and research unit, and its head is directly responsible to the Rector of the University. It is located outside the main University campus, and it is oriented mainly on teacher training, and it is didactically well equipped. For many years, the Department has also focused on the training of young university staff and doctorate students.

4 Development of pedagogical competences

A research project was carried out on "Development of pedagogical competences of young university staff" (2001) and the level of the competences of University staff from their own point of view was described in its final report. The results have been used for improving course content and designing new courses, while respecting the specific needs of the Czech University of Agriculture and their staff. The aim of the research project has been to design and realize the system of permanent complex development of a university teacher. The results will be also used for a new project of the Institute of Education of CUA, in which the university staff development is going to be one of the crucial tasks.

Some results of the study

From the total number of 143 respondents, there were 100 male and 43 female university teachers (30 %). On average, the age of the respondents was 47.2 years, ranging from 25 to 78. The main method, beside others, was a structured questionnaire which investigated a subjective evaluation of own pedagogical competences of the respondents. The question "I have theoretical knowledge about an educational process at University level" was positively answered by 40 respondents (97.9 %). The majority of them judged their own theoretical knowledge as intermediate or high. Women indicated a higher evaluation.

Table 1: Self-assessment of the theoretical knowledge by male/female respondents

Scale	total	%	Male		Female	
			Number	%	number	%
Not answered	3	2,1	2	2	1	2,3
I'm not able to judge	0	0	0	0	0	0
Not at all	6	4,2	6	6	0	0
Deficiently	2	1,4	1	1	1	2,3
Partly	17	11,9	11	11	6	14,0
On the average	40	28,0	32	32	8	18,6
Largely	51	35,6	33	33	18	41,9
Completely	24	16,8	15	15	9	20,9
Total	143	100 %	100	100 %	43	100 %

Table 2 shows the responses according to academic position held.

The lower assessment given by assistants and senior assistants was partly expected. However, the assessment of professors was quite surprising. Some of the professors admit only partial theoretical knowledge of University teaching. The highest self-evaluation of opinions in this field was given by associate professors, of which about 70 % have given one of the highest grades of the scale.

In terms of the type of specialization, the results show that the teachers of social sciences have the highest opinion and by contrast, assistants teaching nature sciences and special disciplines have the lowest.

Table 2: Self-assessment of the theoretical knowledge by position

Scale	Total		assistant		senior assistant		associate professor		professor	
	No.	%	No.	%	No.	%	No.	%	No.	%
Not answered	3	2,1	0	0	1	1	2	8,7	0	0
I'm not able to judge	0	0	0	0	0	0	0	0	0	0
Not at all	6	4,2	2	40	3	3	0	0	1	7,7
Deficiently	2	1,4	0	0	2	2	0	0	0	0
Partly	17	11,9	0	0	11	11	2	8,7	4	30,7
On the average*	39+1	28,0	2	40	32	32	3	13	2	15,4
Largely*	50+1	35,6	1	20	35	35	11	47,8	3	23,1
Completely	24	16,8	0	0	16	16	5	21,7	3	23,1
Total	143	100	5	100 %	100	100 %	23	100 %	13	100 %

* Two respondents did not mention their positions

The question "Do I know how to use the methods in which I will encourage students´ interest and their motivation?" was answered by 139 respondents (97.2 %). The majority of responses were in the upper half of the scale, average or high.

Table 3: Self-assessment of methodology to encourage motivation by female/mail respondents.

Scale	Total		Male		Female	
	Number	%	number	%	number	%
Not answered	2	1,4	1	1	1	2,3
I'm not able to judge	2	1,4	1	1	1	2,3
Not at all	4	2,8	3	3	1	2,3
Deficiently	3	2,1	3	3	0	0
Partly	8	5,6	6	6	2	4,6
On the average	41	28,7	27	27	14	32,6
Largely	58	40,5	42	42	16	37,3
Completely	25	17,5	17	17	8	18,6
Total	143	100 %	100	100 %	43	100 %

Nearly 60 % of the university teachers had some information about the methods and procedures leading towards encouraging interest and activity of the students above the average level.

Table 4: Self-assessment of methodology to encourage student motivation by position.

Scale	Total		assistant		senior assistant		associate professor		professor	
	No.	%	No.	%	No.	%	No.	%	No.	%
Not answered	2	1,4	1	20	0	0	1	4,3	0	0
I'm not able to judge	2	1,4	0	0	2	2	0	0	0	0
Not at all	4	2,8	1	20	2	2	0	0	1	7,7
Deficiently	3	2,1	1	20	0	0	1	4,3	0	0
Partly	8	5,6	0	0	6	6	0	0	2	15,4
On the average	41	28,7	2	40	30	30	5	21,8	3	23,1
Largely*	58	40,5	0	0	40	40	13	56,6	4	30,7
Completely*	25	17,5	0	0	19	19	3	13,0	3	23,1
Total	143	100	5	100 %	100	100 %	23	100 %	13	100 %

* Two respondents did not mention their positions.

Table 4 lists responses according to teaching post. The highest rate of self-evaluation of student motivation was shown by the associated professors (70 %) and senior assistants (59 %). Professors scored equally in the categories intermediate and largely. Two of them admitted that they have only a partial knowledge of how to encourage the interest and activity of their students. Within the investigation, the scope of other pedagogical competences has been mapped, including the ability to transfer scientific knowledge into the teaching process.

The Department of Education has also carried out a research study across all four faculties of the orientation of the students of Czech University of Agriculture and their interests in agriculture Together, 658 respondents have been asked, 375 full-time students in their first study year and 283 full-time students in their fifth year of study. Students have also been asked about their opinion of the quality of teachers' presentation and teaching practices of the academic staff of CUA. Students were in their appraisals serious, although often quite critical. According to the students´ evaluation, the presentation methods are not particularly interesting and do not encourage activity. In their opinion, the transfer of knowledge is done in a very passive way. This critical aspect is partly compensated by the fact that from the content point of view, students are satisfied and they value their teachers as professionally capable. Table 5 explains in detail the major problem they see in the pedagogical abilities and didactic skills.

Table 5: Students' opinion of the quality of presentations according to the year of study.

Scale	1st year of study		5th year of study	
	number	%	number	%
Fully correspond to the needs of students	7	1,9	4	1,4
Mostly correspond to the needs of students	140	37,3	110	38,9
Mostly do not correspond to the needs of students	41	10,9	32	11,3
Completely do not correspond to the needs of students	8	2,2	3	1,1
Only rarely interesting and activating procedures are used	76	20,3	74	26,1
Procedures are mainly passive passing of the content	74	19,7	57	20,1
I am not able to judge	29	7,7	3	1,1
Total	375	100	283	100

As a result of this research, a new course "Basic pedagogical and presentation skills" has been developed and realized for the research students of the University.

5 Design of the course and its evaluation

The course took place in the facilities of the Department of Education in February 2003 and 15 participants, PhD students of the Faculty of Economics and Management, took part in it. At first, they thought that pedagogical skills are an inherent part of the specialization of a teacher. Most of them thought *"If I am an expert in my specialization, I am also able and I have the ability to teach and transfer my knowledge to my students".* As lately as during the course, they have discovered new reality, until that time unknown. They have admitted that to be an excellent university teacher, they have to have pedagogical knowledge and they have to be an expert and professional in this field, too.

As far as the final evaluations are concerned, most of the participants have given a positive feedback and they have recommended the course to their colleagues. The majority of them have asked for more lessons, especially for the practical training of presentation skills. They have recommended a reduction in the amount of theoretical lessons and the use of more examples from practice. The participants have highly appreciated a constructive and well-meant criticism, a pleasant and very friendly atmosphere, in which they have corrected their own deficiencies and mistakes and developed new experience. An explicit conclusion has been that all academics should experience this kind of training.

The evaluation of the course was in some way in contradiction with the self-assessment of quite highly self-confident university teachers, respondents of the research study. The participants of the course have greatly valued the use of audiovisual equipment. Microteaching presentation, filmed on video and afterwards analysed, has been a very efficient and welcomed method. When they could see their real communicative endowment, the majority of them have changed their original view of their own communicative capabilities. According to these reflections and through our long-term experience and also international experience, it is obvious that focussing on communicative and presentation skills together with social-psychological skills is inevitable.

6 Change in the University structure

Within the last decade many crucial changes have taken place at the Czech University of Agriculture. New curricula have been developed, new study programmes are offered, ICTS has been introduced and an internationalisation of the education and research is one of the main priorities. The faculties have changed their names according to the new content of the offered study programmes. The development of the Department of Education has recently undergone a remarkable progress. Together with the significant changes in the whole society, great emphasis is focused on the continuous education. The Department of Education is going to be transformed to a teaching and research unit, a he University Institute according to the Czech University Law (Zák. č.111/1998 Sb) named the Institute of Education and Counselling. The institute will be divided into three departments – i.e. the

Department of Teacher Training, the Department of Professional and Personal Development and the Department of Continuous Education with the Counselling Unit for the students with special needs.

7 Conclusions

Competency has been defined as the ability to perform or carry out defined tasks in a particular context at a high level of excellence. It is more than only knowledge and skills. It includes personal attitudes connected with social and moral appropriateness. An analysis has been made of competences in seven categories of the characteristics of good educators. Such an analysis gives a framework for both teachers and their trainers with which to assess personal goals and perceptions. Progress can be later monitored during the training and afterwards in professional experience as an educator. University teachers, like other professionals, have to respect the fact that they will not have enough knowledge from their formal education; even it was the "best one". They have to continuously develop their knowledge and teaching techniques, and not only in the subject matter. It is absolutely essential to achieve the balance among all kinds of the above-mentioned competences. The development of self-reflection and thinking in terms of students leads to the questions like: "*And what about students?" "Do they understand me?" "If not, is it my fault?" How will I teach next time, what am I going to improve?"* These and many other questions he/she has to ask to create better and valuable feedback which then leads to higher self-confidence and satisfaction. People are partly "born" with the presumption and potency of being a good educator but should be given the opportunity to achieve pedagogical mastery through a proper education, not only through life empiricism.

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Competence building of teachers: Case of the Faculty of Agriculture, University of Belgrade

Vesna Poleksić, Steve Quarrie, Sofija Pekić, and *Ana Pešikan

Faculty of Agriculture, University of Belgrade, *Institute of Psychology, University of Belgrade and Educational Forum, Belgrade, Serbia and Montenegro

Abstract

The aim of this paper is to present a project "Enhancing of Academic Teaching and Research Skills in the Agricultural Sciences" carried out by the Education Forum and a group of teachers from the Faculty of Agriculture University of Belgrade. The project built on the existing enthusiasm of a part of the teaching staff at that Faculty for advancing their teaching and research skills as well as continuation of the reform process that was initiated by the former management team of the Faculty.

The project was carried out from May 2003 until June 2004 and consisted of a series of 1 to 3 day-modules on different aspects of teaching pedagogy and other academic skills.

The main goal of the project was the advancement of quality of the process of teaching/learning and consequently the increase of competence of education at the HE level. The project also aimed to facilitate dissemination of these acquired skills to the younger teaching staff at the Faculty.

The project had an additional goal to enable the reform-oriented group of professors and assistants at the Faculty of Agriculture and that have cooperated in the development of several recent Tempus projects to contribute more efficiently to the realization of these projects.

In this, first of its kind, project in Serbia a close cooperation between specialists for the subject (content) and those for the teaching methodology was established.

The assimilation of new interactive methods of teaching/learning should have an immediate positive effect on professors (and assistants) taking part in the project's activities by enabling them to take a more active and participatory role in the teaching process.

1 Introduction

A change in the reform-oriented management team and lack of enthusiasm of most of the teaching staff, coupled with political indecision in the country regarding higher education policy have resulted in the reforms that started at the Faculty of Agriculture, University of Belgrade (Poleksic et al, 2002) coming largely to a halt. Upon the initiative of the former dean, Professor Sofija Pekic, a group of teachers and assistants of the Faculty wishing to continue the work carried out by the former Committee for Reform of the Faculty, together with the professional assistance of colleagues from the Education Forum, started the project "Enhancing of Academic Teaching and Research Skills in the Agricultural Sciences ". The Education forum is an NGO actively involved in training teachers in the principles and application of interactive learning (http://www.eforum.eu.org/).

Background

In 2002, a student questionnaire that assessed the performance of Faculty teaching staff showed that some lecturers were boring, some badly prepared for their lectures, with classes often cancelled, some lecturers were abusive towards students, and some students complained about aspects of corruption.
Ideas and plans for improving the quality of education and the quality of the teaching staff emerged among the young and enthusiastic teaching staff of the Faculty (about 10%). They wanted to continue with some sort of activities that would allow them to improve themselves as academics. With the help

of professionals, pedagogues from the Education Forum, a training course for the interested group of teachers was put together.

The project
The academic training project "Enhancing of Academic Teaching and Research Skills in the Agricultural Sciences" was organized by the Education Forum and Reform team of the Faculty of Agriculture, University of Belgrade. It was funded by the Fund for an Open Society. Project coordinators were Dr Aleksandar Bogojevic, Education Forum and Prof Sofija Pekic, Faculty of Agriculture. The project was carried out from May 2003 to June 2004. The project web site is www.obrazovanje.eu.org/univ, with a link to an English version

Participants
A group of 25 professors and teaching assistants (post-graduate students) from the Faculty of Agriculture as well as a few others from the faculties of Chemistry, Biology and Pharmacy at the University of Belgrade.

Instructors:
- Education Forum experts in pedagogy: Ivan Ivic, Ana Pesikan, Slobodanka Antic and Ratko Jankov
- Members of the Faculty of Agriculture Reform Team: Vesna Poleksic, Goran Topisirovic, Zora Dajic Stevanovic, and Sofija Pekic
- Marija Mladenovic, lecturer in dramatic arts, University of Arts, Belgrade
- Steve Quarrie, visiting professor, Newcastle University, UK
- Leon Brimer, Pedagogical Committee of the KVL University, Denmark
- Sören Kruse, Pedagogical Faculty of the University of Copenhagen, Denmark

Project goals
The project was built on the enthusiasm of the team of teaching staff at the Faculty of Agriculture to advance their teaching and research skills. An additional goal of the project was to facilitate dissemination of these skills to the younger teaching staff at the Faculty.

The major objective of the project was to develop and implement a methodology for active teaching/learning at the higher education level. The pilot group of teachers from the Faculty of Agriculture trained in this project, together with experts from the Education Forum could become a nucleus of a future Center for teaching/learning of the faculty or the whole University. This type of institution still does not exist at Serbian universities, nor do specific programs for teachers training in pedagogy.

The assimilation of new interactive methods of teaching/learning should have an immediate positive effect on the teachers taking part in the project by enabling them to:

- create their lectures using the active teaching/learning methodology
- develop specific relevant activities through which students can efficiently acquire professional skills and knowledge as well as to understand better the aim of the subject learnt in order to develop motivation for learning
- evaluate quality and effectiveness of their own and their colleague's lectures
- motivate students to take a more active and participatory role in the teaching process.

3 Pedagogical modules

The concept of interactive teaching is based on building links between three fundamental parts: goal (why), content (what) and method (how). The content which has to be transmitted to the student is mainly defined by the subject (curriculum) and outlines the aim of the lecture. To achieve this aim the teacher selects the most appropriate method, from active receptive meaningful learning to problem

Table 1: Calendar of activities

Module	**duration**	**Instructors**
Introductory meeting	(1 day) - held on 10.05.2003	Ivic, Bogojevic, Jankov
Basic conditions for harmonization with the Bologna declaration	(2 days) - held 20-21.06.2003	Dajic-Stevanovic, Poleksic, Topisirovic, Pekic
Basic drama and oratory skills	(2 days) - held 27-28.06.2003	Mladenovic
Active teaching/learning – basic seminar.	(3 days) - held 28-30.08.2003	Ivic, Pesikan, Jankov, Antic
Enhancing basic academic skills of teaching staff.	(2 days) - held 26-27.09.2003	Quarrie
Active teaching/learning – analysis of developed scenarios.	(1 day) - held 25.10.2003	Ivic, Pesikan, Jankov, Antic
Active teaching/learning – implementation of scenarios at the Faculty of Agriculture	during the school year	
Methods for evaluation of teaching and learning and an introduction to problem-centered learning	(2 days) - held 19-20.11.2003	Brimer, Kruse
Active teaching/learning – peer review and quality assessment of implemented scenarios	(2 days) - held 30-31.01.2004	Ivic, Pesikan, Jankov, Antic
Final seminar on project results	(1 day) - held 12.06.2004	Ivic, Pesikan, Jankov, Antic, Pekic

solving and creative learning. It is important to emphasize that one ideal method doesn't exist, and that the effectiveness of teaching/learning depends on the quality of association (connection) of the mentioned parts of the teaching process (content, goal, method).

The particular expertise of Education Forum staff was in providing training in interactive teaching/learning techniques and giving teachers the skills to be able:

- to move from teacher-centered to student-centered education
- to motivate students to participate actively in the teaching process
- to stimulate students to learn during the teaching process
- to develop student skills for critical reasoning
- to get them thinking for themselves
- so that students can link (unite) and apply the knowledge they have learnt
- to develop the student's capacity for team work
- to develop student skills in solving problems and professional decision-making
- to train students for argument-founded dialogue
- in order to achieve these goals, teachers were trained to design their class in a way that would involve students in relevant activities i.e. those enabling them to understand and become skilled in a specific discipline in agricultural sciences.

The major aim of any interactive teaching unit is to achieve as many students as possible doing as many relevant activities as possible for as long a time as possible towards realizing the goals of the class. For this aim, course participants were taught the skills for planning, carrying out, and evaluating interactive teaching classes.

Planning the class

1. Preparing the scenario to focus on aims and student activities
2. Analyzing the scenario for
    a) clarity in the definition of aims
    b) the extent to which proposed activities meet all the aims, as illustrated by the diagram:

Student activities (SA)	Aims (A)		
	A1	A2	A3
SA1			
SA2			
SA3			
SA4			
SA5			

3. Improving the scenario if the analysis shows aims not covered by student activities (the number of empty cells).

Carrying out the class
These analyzed and improved scenarios were then implemented at the Faculty and peer-reviewed by training course participants present during the class to examine the extent to which the aims were met.

Evaluating the class
A peer review assessment as well as a "sequential analysis", a technique developed by Education Forum experts in pedagogy, was used for the evaluation of the class.
The extent of student interaction was assessed according to:

- motivate students to take a more active and participatory role in the teaching process
- how many students participated in each activity
- how long did each activity last
- how well did the activity satisfy its stated aims

4 Evaluation of the training course

With the purpose of evaluating the whole training course, a preliminary analysis was carried out. Since several teachers/course participants gave to students the same questionnaire which was used in 2002, scores obtained in 2004 were compared with those for 2002 and tested for significant differences using the Chi-squared test. The following analysis was done by comparing scores of three professors who applied the principles of interactive teaching/learning acquired during the course and whose classes were peer reviewed by colleagues. The subjects taught were botany (professor Sofija Pekic, 53 students questioned in 2004), zoology (professor Vesna Poleksic, 31 student questioned), and biochemistry (professor Biljana Vucelic-Radovic, 41 student questioned). The results are shown in table 3 (assessment of subject) and table 4 (assessment of lecturer).

Table 3: Assessment of the subject

Questions	Mean scores*		
	Sofija	Vesna	Biljana
1. The presented material was interesting:	**4.18****	3.74	**4.29*****
2. The workload given was optimum (not compared with 2002):	3.94	3.37	3.63
3. I used the recommended literature during the course:	**4.24****	**4.39*****	**4.39******
4. I completely grasped the subject during the lectures:	3.32	2.94*	**2.88***
5.My interest in the subject grew after listening to the lecturer:	**3.92****	3.19*	**3.80*****
6. This material will be useful for my future career:	4.40	4.26	**4.68****
7. The aims of the subject were clear:	4.41	4.65	**4.39***

Bold – score better than 2002 mean
Underlined – score worse than 2002 mean
*Frequency distributions for scores were compared with those for 2002 and tested for significant differences using the Chi-squared test.

Table 4: Assessment of lecturer

Questions	Mean scores*		
	Sofija	Vesna	Biljana
8. The method of presentation was understandable:	**4.37****	4.38	**4.15****
9. The lectures (exercises) were made interesting:	4.03	3.71	**3.63*****
10. The lecturer spoke clearly and distinctly:	**4.55****	4.61	**4.40*****
11. The lecturer arrived prepared for the classes:	4.90	4.87	**4.39****
12. Time in the classes was used effectively:	**4.35****	4.65	**3.95*****
13. I am satisfied with the quality of holding lectures:	4.51	4.55	**4.24****
14. The lecturer had a close communication with students:	4.51	4.35	**4.56*****
15. The lecturer was accessible to students outside classes:	4.37	4.37	**4.28****
OVERALL ASSESSMENT OF THE LECTURERS			
16. Overall I was satisfied with the way the lectures were given:	4.46	4.10	**3.78****
17. I was satisfied with the behavior of the lecturer/assistant:	4.69	4.43	**4.55****

Bold – score better than 2002 mean
Underlined – score worse than 2002 mean
*Frequency distributions for scores were compared with those for 2002 and tested for significant differences using the Chi-squared test.

5 Conclusions

Through the project "Enhancing of Academic Teaching and Research Skills in the Agricultural Sciences" the principle of active teaching/learning was, for the first time, developed for and implemented at the University level. This project has shown that quality assurance of academic skills has to start with competence building of teachers which will lead to competence building of students, i.e. future professionals.

The principle of team-building was one of the major features of this project. Effective cooperation was obtained between pedagogues specialized in the teaching/learning methodology and teachers of the Faculty of Agriculture as, primarily, specialists in the content of their subjects. As the result of this collaboration:

- Participants of the training course found it extremely valuable
- It benefited not only the lecturers by getting them to think about the process of learning, but also the lecturers' students
- Students immediately noticed improvements in the teaching quality and responded positively to this
- There is a huge need for courses of this type in Serbia, though, unfortunately, not yet a huge demand.

We are now revising the contents of the course and plan to apply for Tempus funds to provide further opportunities for academics at Serbian universities to improve themselves and the learning experience they give their students.

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Developing relevant competences

Combining and interweaving the development of generic and subject-specific competences: curriculum development experiences at the University of Plymouth with a focus on the implementation of Personal Development Planning

Mark Stone

University of Plymouth, Plymouth, UK

m2stone@plymouth.ac.uk

Abstract

The history of combined and interwoven development of student generic and subject-specific competences is not new at the Seale-Hayne campus of the University of Plymouth. A fifty plus year tradition of vocational education at graduate level extends beyond practical land management skills to those managerial disciplines that enable the graduate of land based industry courses to manage both their enterprises and their own performance and development within them. Therefore the development and roll-out of 'Personal Development Planning' (PDP) is just the latest contribution to this heritage.

The term PDP has gained currency in the UK based on the recommendation of the 1997 National Committee of Enquiry into Higher Education, chaired by Sir Ron Dearing, that all students should have the opportunity to engage in 'Personal Development Planning'. The Higher Education Funding Council for England has set a target date of 2005 for the institutions it funds to give their students this 'opportunity'.

The embracing of PDP at the University of Plymouth has not replaced or superseded all previous skills development and vocational strategies and approaches. Rather, PDP has added to, refined and extended the work. However, a specific new development has been the explicit nature of the practice including a mission to both explain to and engage with students.

This paper is based on the results of trials and embedding of Personal Development Planning (PDP) within the agriculture and land use/management curricula at the University of Plymouth between 2001 & 2004. The paper covers work to formalise and structure personal development within the curriculum which included creating a pedagogic and technical system specification and benchmarking this with existing developments within the UK Higher Education (HE) community.

As well as outlining the origins and aims of PDP and the response to these drivers at the University of Plymouth, the initial results of research to uncover student reaction and response to PDP will also be presented and explored. While the aims of any educational development may be highly laudable, the proof of their worth is in the value they provide to end users; students, graduates and the organisations that employ them. While aiming to fulfil end user needs, PDP must also be manageable for the university; including how it fits with the internal and external quality measures by which it is judged.

In trying to address this issue of value, the following conference theme focused questions will guide the evaluation of the PDP experience for land based industry courses at the University of Plymouth:

- What are the pedagogic implications of developing generic and subject-specific student competences together?
- How will the roll-out of PDP affect the balance between the development of generic and subject-specific competences in degree courses?

- Can/has/will embedding PDP within courses strengthen the curricula and thereby improve the learning experience of students, and their preparation for the graduate labour market?
- Are the expectations of PDP by government [UK], industry and students both realistic and achievable?
- Will PDP enhance a university's capability to prepare graduates for life-long learning?
- How will PDP impact on the design and delivery of continuing professional development?

To conclude, the paper will first outline the key lessons drawn from the PDP implementation experience and outline the next stages of development for this evolving area of practice and secondly describe the plans for further research.

1 Personal Development - definitions and drivers with English Higher Education

PDP can stand for three distinct processes / outputs; however the initials are widely used interchangeably. All three are academically and personally useful.

1. Personal Development Planning
2. Personal Development Portfolio
3. Personal Development Profile

An effective 'PDP' needs to include all 3 elements.

The Higher Education Funding Council for England (HEFCE) want, in brief terms, for all students to:

- have the opportunity to engage in Personal Development Planning and
- be provided with a profile that explains in more detail the work (including level) that the student has been engaged in during their time at university

Higher education in England is required to implement progress files, in order to facilitate Personal Development Planning, by September 2005. When implemented this will: "provide each student with a transcript; a record of their learning and achievement and a means by which the student can 'monitor, build and reflect upon their personal development' (LTSN July 2002).

PDP definition and objective (Guidelines for HE Progress Files, 2001)
Definition: *"a structured and supported process undertaken by an individual to reflect upon their own learning, performance and/or achievement and to plan for their personal, educational and career development."*

Objective: *"to improve the capacity of individuals to understand what and how they are learning, and to review, plan and take responsibility for their own learning …"*

PDP Developments in England must fit with the following drivers / agendas
- Subject Benchmark Statements
- Programme (Course) Specifications *
- Progress Files
- National Qualifications Framework
- Codes of Practice
- Academic Review

* Programme specifications give intended outcomes of the course in terms of:

- knowledge and understanding that a student will be expected to have upon completion
- key skills: communication, numeracy, information technology and learning how to learn
- cognitive skills, such as an understanding of methodologies or ability in critical analysis
- subject specific skills, such as laboratory skills."

2 PDP and skills development

"*Skill refers to actions (intellectual or physical) which develop with experience and practice, performed in a competent way to achieve a goal*" (Romiszowski 1988). Transferable skills are those skills that can be transferred from one cognitive domain to another or from one social context to another (after Bridges 1994). Skills development is not new to HE but PDP helps to move from a largely implicit approach to skills and incorporates explicit skills development into the curriculum.

Honeybone, Blumhof, Hall & Palmer (2001) tells us explicit skills can be development through:

- Awareness: increasing awareness of importance of skills
- Articulation: providing the language to articulate skills
- Advancement: encouraging the advancement of skills

The PDP employability skills agenda covers:

- traditional intellectual skills
- 'new' core or key skills including ICT
- personal attributes deemed to have market value
- knowledge about how organisations work and how people in them do their jobs

3 Pedagogic underpinnings of PDP

Models of PDP are rooted in the designer's pedagogic view learning processes and the appropriate role for student and academic. Key influences on the pedagogic underpinnings of PDP include…

Constructive Alignment (Biggs 1999)
- Constructive alignment: "*a marriage between a constructivist understanding of the nature of learning and an aligned design for teaching*"
- Aligned teaching: " *a balanced system in which all the components (curriculum, teaching methods, assessment procedures, local and institutional climate, rules and procedures) support each other, as they do in an ecosystem*"

The Kolb Cycle (1984)
- Concrete experience
- Reflective observation
- Abstract conceptualisation
- Active experimentation

Self-Directed Learning Cycle: Adaptation of Kolb Petty (1998)
- Self-evaluation (where am I now?)
- Goal-getting (where do I want to be?)
- Action Plan (how to get there)
- Action (implement/monitor)

Socio-constructivism: following Kolb (Cowan 2002)
- Less direct involvement of teachers
- Drawing upon what peers can offer:
  - in experience
  - in facilitation
  - as fellow discussants

Successful PDP requires the following learning processes / teaching functions in both actual and virtual learning environments (MacFarlane 1992):

- orientating
- motivating
- presenting
- clarifying
- elaborating
- consolidating
- confirming

The pedagogic approach used was

- Vocational and employment focused
- An outcomes based approach: including academic content and skills
- Reflective: what have I, what will I, what did I and what next
- Continuing Professional Development focused: applying the learning a context or future plans
- Holistic: making linkages across modules and non academic content

4 Constraints, barriers and challenges

The implementation of PDP has encountered significant **constraints and barriers** including:

- PDP is important but it might be enhanced to the detriment of an existing subject focus
- PDP challenges the traditional view of higher education
- problems of terminology
- problems of transference - student and data
- problems of development - resources and progression
- problems of assessment, especially reflection
- problems of curriculum design
- problems of engagement – student and staff

Key challenges

- Getting the participation of all students
- Integrating PDP within the curriculum
- Clarifying the learning processes that underpin PDP - experiential, social constructivist?
- Resolving how PDP fits into both virtual and face to face learning environments
- Ensuring ownership of the process by students and staff
- The level of PDP granularity - e.g. getting the volume and level of detail right
- Tracking student progress
- Protocols for the access to a student PDP by tutors
- Linking PDP to a final university wide 'Profile'

5 Integrating PDP at different stages of the curriculum development cycle

Although small scale curriculum developments are happening all the time, the introduction of a course or scheme wide change such as PDP can be daunting. One way to determine a strategy for implementation will be where the course or scheme is in the cycle of review and approval. Different stages offer different challenges and opportunities:

1. Working with PDP after recent degree scheme/course review or approval
2. Working with PDP between degree scheme/course approval and review
3. Working with PDP when reviewing or approving a new degree scheme/course

This case study is based on scenario three.

Fundamental questions that will shape a PDP specification

When developing or adopting a PDP system or approach there are a number of fundamental decisions to be taken. By working through these issues and making choices that suit the academic and resource context a baseline PDP specification will be created. This specification can then be used to develop your own system or to assist with evaluating existing systems or approaches for their applicability and adaptability to your situation:

(1) When and where is your PDP going to benefit the student?
(2) Will your PDP be embedded within the curriculum or independent of it?
(3) Will your PDP be voluntary or compulsory?
(4) Will your PDP include some form of assessment?
(5) Will your PDP be process or evidence driven?
(6) What will be the role of technology within your PDP?

Our choice was to build on embedded PDP activities, make it compulsory, assess it and use technology – particularly in years one and two. Research suggested that optional take up of PDP without some form of initial enforced engagement was very poor.

Curriculum design and PDP

One of the biggest challenges and opportunities is how to build PDP into the curriculum in a way that:

- makes sense to students and is a valuable part of their learning
- can be delivered and supported by staff without a huge workload increase
- can be organised, quality controlled and reported on by managers

6 Research and development process 2002 - 2004

A small group including students was charged with finding out how PDP could / should be incorporated into modular degree scheme with up to a thousand students and twenty seven degree titles. The key was embedding meta-level transferable graduate skills (e.g. learning for transfer).

Development objectives

- To give all students the opportunity to undertake PDP in an integrated way within a wide range of learning activities.
- To create a customisable PDP system, compatible with university / end user systems that is non-bureaucratic and which places only moderate burdens on staff and students.

Summary research and implementation plan

- establish methodology, evaluation strategy and identify collaborators including learning technologists and the careers service
- defining an operational PDP definition
- PDP literature including personal effectiveness and the flexible graduate
- establish relevant institutional drivers
- reviewing PDP work undertaken within the university of Plymouth and other bodies including the Centre for Recording Achievement
- determining an appropriate operational PDP model for the faculty modular degree scheme
- determining appropriate recording protocols
- determining an appropriate support structure including the role of tutors and technology for the management and organisation of PDP
- pilot a system PDP *with 160 year one students*
- establishing a working model that could evolve along with the faculty modular degree scheme
- producing an embedded exemplar PDP system for the university
- embed PDP data gathering to facilitate further educational approach

An outline specification PDP specification was worked up. This was used to analyse and judge the potential use of existing systems; we aimed to find an existing PDP solution that could be bought into or adopted (not necessarily an electronic one). Visits and discussions helped refine the specification. However, disappointingly no one system met our needs.

Visits and interviews concerned eleven PDP 'systems', seven institutions and numerous individuals over a six month period in 2002; including systems at Thames Valley & Loughborough Universities. Thames Valley have a complex IT based system and Loughborough's system is built around preparation for engineering professional body accreditation / membership; by creating a portfolio of evidence to show why you should be exempt from entry exams.

However our approach has been developed from a course point of view, therefore our system needed to be embedded in the curriculum. The main thing we found was that many institutions seemed to be going out of their way to make PDP and PDP systems more complicated was necessary.

7 Piloting and Feedback

A successful trial in 2002/3 (focusing on planning and excluding accessible online storage) was included within a 10 credit core IT module. 160 students engaged in PDP through a variety of exercises including a library assignment, skills tests and careers quiz's, culminating in a final reflective report summarising their current position, detailing their development plans and giving outlines of their future aims.

The trail PDP was objective focused, built on the

- 5 x subject specific course objectives (one from each pathway)
- 6 x level 1 Graduate Attribute and Skills (GAS)

The aim is to integrate PDP as a mainstream part of the curriculum was assisted through the identification of 'PDP friendly modules' which were either:

- modules designed to use or interact with PDP features or resources – e.g. a module assessment contains an element of PDP activity within it
- modules designed to support skills development, extend induction activity or provide an integrating or employment focus which used or incorporating PDP processes

Feedback and dialog

Tracking student progress was essential to the development of the process. Feedback involved the use of open questions about module objectives, exercises and format. 20 groups of 4 - 5 students were questioned throughout the module and terminal feedback would have missed too many students. This was because the module design allowed students to complete the module early if all course work was handed in, marked and of a passing standard. This work was helped by a weekly one hour lecture/workshop session followed by one hour supported help in the computing suite.

A wide range of staff were consulted and developments disseminated in collaboration with the University Educational Development teams and PDP working group. All year tutors, course leaders and representatives from library and computing services were invited to join the workshops where a good lunch was provided!

Challenges

- how to make PDP terminology clear - *this was overcome by using explicit explanations at the start and demonstrating the electronic PDP; few questioned the terminology thereafter*
- getting the participation of all students - *this was not a problem as all the exercises could contribute to an assessment*
- ensuring ownership of the process by staff

Key student feedback:

- No students questioned the PDP concept in terms of its usefulness or relevance, but many were worried it would be too taxing in terms of time and effort and that it may distract them from their 'core' subject/s
- 15 students thought the exercises 'too easy' and wanted more 'in depth' feedback on the content of their submissions (They felt too much concentration and feedback was placed on the IT and PDP process - these were mainly students who were keen on the idea of PDP and or those that had engaged in similar types of activity before)
- 10 students asked how they could receive further support if they wanted to continue engaging with the PDP for their personal development after the module finished
- no students complained of 'pointless exercises' used to show IT competence, as had been received in the past
- the briefing session at the start is vital, late starting students felt at a disadvantage
- the integration of the library induction assignment was generally well thought of (apart from some technical/typographical inconsistencies), especially that it could be started early (given out during induction)
- the fact that library assignments were marked by the library team was well received and helped to give students a sense of partnership between lecturers and library staff
- a mixture of electronic and paper based hand in, worked well for the students in understanding systems early on
- the rapid marking of assignments was greatly appreciated and the thing mentioned by almost all students (most assignments were marked within 48 hours)
- students welcomed the chance to submit assessments prior to the deadline for feedback and resubmission if required
- a surprising proportion of students completed and submitted additional voluntary exercises contained within the PDP (60% did at least one extra item)
- 12 technical or logistical criticisms were received, mainly relating to saving data from an online testing programme and problems with Acrobat on some PCs.
- the module was not discussed at course committees; normally a sign that the module is well organised and working within student expectations

Problems encountered

- a technological solution for direct data entry straight into a database was designed but not completed by computing services for the start of the year
- database scalability issues may affect future data management plans
- students tend to think in whole module or assessment terms; therefore the evidence provided is often too large or not specific enough
- trying to create minimal systems that suits a wide range of users

Lessons learnt

The change from the highly successful 10 credit pilot to a 20 credit module resulted in a loss of pace and immediacy. For most students, the pilot module only ran for 8 weeks of the 12 week term; students had to start and work hard on PDP immediately; but were free at the end of term to focus on other studies.

Students could hand in work at any stage up until the assessment deadline and it would be marked and if necessary or desired resubmitted. The intense front-loading suited PDP well however produces an intense staff workload to achieve an effective speed of response (e.g. marks and feedback within 72 hours). Taking the work into a second term reduced student urgency and focus.

Giving students too much time to think about their learning in year one resulted in a significant minority overstressing about how much time to spend on their work; 'if I've got six weeks to do this, it must be more complicated than it seems'. With shorter deadlines many students would still have found

the work difficult and they might have still complained but they would have done it and they would have got their results back and then they would have been able to move on.

The plan for next year is to have a 6 or 8 week burst in term one and then that module will disappear off their timetable for the rest of term so students can concentrate on the other modules and then they come back to PDP at the start of the second term with another 6 or 8 week bust of activity. This structure works for both students and staff in a modular structure.

Setting the academic level of PDP work is fraught with difficulty; if it is too easy, students are not stretched, if it too onerous it may not be making a contribution to their learning and also distracting them from other aspects of their courses.

The development of PDP is seen as an evolving one built on the results of pedagogic research, feedback and experience. Selected employability and research materials have been piloted this academic year to lay the foundation and act as a pilot for the PDP 210 module.

8 The resulting land-based industry PDP model

Each course has six 60 credit pathways each of which is divided into 3 x long and thin 20 credit modules; one in each year / stage with 120 credits per year. One of these pathways would be a 'generic pathway' which would be part of all courses.

The model takes students from planning in year one, to a portfolio focus in year two and to independent study in the final year:

- year 1 focuses on PDP plus IT and learning skills
- year 2 focuses on PDP plus employability and research skills; generic research and data handling skills are taught using data related to employability including graduate destinations and graduate salaries
- in the final year, PDP is not a taught component of the course being the honours project / dissertation module

Pathway *60 Credits*	**Stage 1 module** *20 Credits*	**Stage 2 module** *20 Credits*	**Stage 3 module** *20 Credits*
Personal Development *Modules and overall pathway objective*	***PDP 110*** Personal Development: Learning	***PDP 210*** Personal Development: Research and Employment Skills	***PDP 310*** Personal Development: Honours Project
	Integrate subject specific knowledge and transferable skills to develop a specialism in depth, conduct a research investigation, and effectively report the findings		

Figure 1: How the PDP modules sit within a three year, 360 credit undergraduate degree

By the time they get to year three, the regular exposure to PDP processes and resources will mean students are familiar with them and are utilising them for a number of different purposes. The key third year relationship is between student and supervisor.

However, the PDP website contains resources that will be useful to student in both their project and in their preparation for entry into work; for example:

- employability guidance and preparation
- goal setting
- learning styles

In addition the research skills support material used in the year two PDP module are available for review and consultation.

PDP resources and support

The best PDP support and resources model found was form the TLTP Keynote project. It had a good structure and some useful resources covering many aspects of PDP. This template was then adapted for our needs. A significant amount of the original Keynote material was used along with home-grown materials including numeracy diagnostic tests and elements from other bodies and institutions such as the Department of Education.

To make it technically straightforward but mainly for pedagogic reasons; we aimed for simplicity. Therefore we kept trying to pair down the design and strip out unnecessary student activity while building in maximum choice and range of supporting resources. After piloting we then pruned further.

Accessibility

The Keynote system was to a large extent compliant with national and international guidelines / standards for accessibility to technological resources [Sender' / W3Ci] e.g. making the site able to be read by someone who is visually impaired.

Therefore a simple website structure was used; cut down to the 'bare bones' to allow individuals to use digital aids to access the site.

However, one compromise involved the use of scrollable pages rather than the very short web within Keynote because student feedback suggested that this was poor design for economical printing. Students also got more easily lost with too many navigational clicks.

Staffing

In term one, the PDP 1110 module is delivered by two lecturers, two post-graduate demonstrators and speakers from the university careers, library, computing and learning skills teams. The lecturer roles are divided between running whole group interactive workshops and marking / giving feedback. The postgraduates are there to support students in dedicated computer lab sessions; this is especially useful for the IT aspects of the module.

Year Tutors

In term 2 the responsibility passes to the year tutors; a lecturer that has responsibility for a significant module for that year group on that course. As the whole course year group will see that member of staff regularly, they are well placed to handle questions or concerns about the academic year.

Some year tutors use a portion of their lectures for PDP guidance and questions; to drip feed input rather than run dedicated PDP sessions. Other staff book formal PDP sessions as a timetabled event or in response to particular group issues. Year tutors needed and wanted training in how to guide and manage these situations best; especially over the marking of PDP assignments.

This involvement in marking a 2000 word reflective assignment on an aspect of their course is vital to gain tutor understanding, engagement and 'buy in' to the PDP process. It also helps students to align PDP activity with the course they can to university to study; many students do not react well to activities they see as generic or free standing from their course.

PDP moves from process to content through the year; term 1 is more about process and term 2 is more about content. The module is front loaded; students do more in term 1 than they do in term 2 (where the core of the year tutor time is allocated).

Year tutors, covering between 20 and 50 students each get a workload allocation for their PDP contribution. This has been popular as previously the tutor role was not timetabled and therefore often a significant but hidden workload. Staff and students told the PDP development team that staff teaching core subjects tend to get asked questions or for advice on any issues of concern for individuals or the group.

Tutors still have additional personal or pastoral care responsibilities that can not be planned for or timetabled. The low level of workload allocation for the tutor role is a significant concern to some staff and potential threat to the effectiveness of the PDP system.

Tutors have struggled to get group tutorials to work in the past, but PDP has given these sessions greater focus and structure; especially the assessment structure. However it does mean that tutor sessions need to be more planned and organised. While tutors are still going to get students knocking on their door at odd times, they can now refer non urgent or generic questions to the next PDP session.

The PDP design has tried to address the motivations of those involved and the pressures they are under.

Getting students started

An exercise called 'hopes and fears' was adapted from a Department of Education personal development profile CD. It gets students to start thinking about what they're hoping for from university and what they're worried about. Just to put it down on paper- what it is they're concerned about. It was designed for 16 year olds starting 'A' levels. With slightly amended wording it worked very well for first year students; allowing them to take stock after applying for and entering university.

PDP Assignments

PDP 110 Assignment 1 is designed to get students started quickly. After a simple introduction, students download a Word form with delimited text entry points. Students are asked about their development to date:

- What has happened in your education to date?
- What have you done at work?
- What have you done apart from work and your education?
- reflections on how they learning
- commentary on communication, ICT, literacy and numeracy skills

Forms include prompt questions to assist with reflection e.g.:

- Can you always understand the written work of others?
- Are there areas of concern over your literacy?

Each pathway has its own overall learning outcome (covering 3 years); the six pathways together make up the course and the overall learning outcomes. Within *PDP 110 Assignment 2 students* are asked to reflect on how they are progressing toward these learning outcomes:

- What are they going to do / use to achieve these aims?
- How will they know when they have achieved their aim?
- what they're going to do, what resources they're going to use, what's their success criteria, have they finished or are they still going…so that one there is 'have they finished it, no/partly/ or yes.

Students are guided to be practical, what can they achieve in one year or one term; for example, one student wrote…'I'm struggling to understand the concepts of anaerobic respiration and I'm going to have to apply this in my exam at the end of the year so…'

In the second term of PDP110, assignment 3 and 4 ask students to focus on one pathway outcome and one graduate attribute and skill and to write a development commentary in more detail. Therefore students are funnelling their personal development focus.

Lessons learnt

This assignment has been less successful because when determining how students would go about choosing particular pathways to focus on, course managers were keen that their pathways were reflected on. The result was that students were asked to reflect all [five] of their course pathways (excluding PDP). The result was an overly complex and repetitive assignment. This alienated the students because they found themselves reflecting in too little detail about too many things.

Originally were students to choose two or three or three pathways to write development plans for because there are always things within a course that students are either more interested in or that they are struggling with. For some staff, resistance to student choice was due to the desire to gather a good student data set to underpin pedagogic research into their teaching specialism.

In the future we would like students to pick two or three course objectives and two or three GAS to focus their work, rather than produce a plan for all – this tends to be repetitive and bland. It does not instil the process as valuable but leads students into a repetitive process. The aspect of choice in personal development is also an important one.

If we are to steer students towards one GAS it would be ICT because it has to do with accessing and collating information. We will probably tell students that they have to reflect on this GAS plus one or two others.

In year two students would be required to make choices from those pathways and GAS not addressed in year one.

9 Embedding, integration and development

We ended up with an independent set of PDP resources including exercises and guidelines about how students might do activities like writing a presentation, bibliographic referencing or creating poster presentations. Any assessments or modules that worked with these PDP resources could be linked to resources in the PDP website. Therefore to facilitate future adaptation / customisation, PDP resources are not embedded in modules nor are modules embedded within the PDP system; they are kept separate - a stand alone PDP resource that can be utilised in a number of different ways by different user groups. Therefore PDP is embedded in our courses, but the two aren't locked together - the resources and the use of them are kept separate.

Potential future developments

- create or integrate a CV resource base / builder incorporating a log of CPD activity including course, work and personal experience
- provide further advice on the assembly of evidence
- develop a student upload of work / evidence to an online storage facility
- create a portfolio of supporting documents and examples of work including assignments and exercise from the PDP that could be held by the university beyond graduation or burned onto a CD for the student to take away on graduation
- link to 'Podules' (mico-modules) on Numeracy, Writing and Plagiarism
- link to the student 'profile' initiative including automatically incorporating course information and an annotated GAS map

Transferability, uptake and flexibility

The PDP is designed to exist independently of any one course or module. This will allow flexible use of the features or resources held within it.

A principle is that new users can add additional resources for their students or customise existing ones. Staff can guide or map for students, those areas of the site they wish them to use, however all resources are available for all users. Therefore every group of new users enrich the overall set of resources. Over time it is hoped a user group may emerge.

Recording achievement

Year one students are asked to indicate the appropriate evidence of their development while doing their planning; but not to submit it; a dry run for year two, when more evidence is required. In year 2 students are guided to think about the evidence they have accumulated to demonstrate their development.

Recording achievement is a difficult area for some students, as their perceptions are based on school or other experiences that have convinced them that PDP is all about writing everything down. The key is assisting students to build a body of evidence that fits their experience and their aspirations.

Our model is working on a database approach with a highly constrained amount of space within which to store evidence. We are trying to work at a level of detail below that of the assignment. The plan is to map what the student has done against the evidence they have and to be able to print a summary as an adjunct to a CV. This would outline Graduate Attributes and Skills in a course and personal context as well as detail modules completed along with evidence of knowledge and skills deployed. Students, academics and employers need a tightly defined, readable and easily updated document.

Minimalism is the challenge, how to get the smallest possible unit of data which provides meaningful evidence. We are planning a database with fields limited to parts of a larger file or assignment; therefore the summary of PDP evidence for the year could be no bigger than 2 to 4 megabytes. Moving a lot of data will always present problems regardless of format; however, using an international standard, such as an XML database will assist with data transfer and interoperability.

Data logistics and storage

Currently students electronically submit their completed Word forms via a module email address pdp110@plymouth.ac.uk. After marking and feedback data is extracted from the Word forms and imported into an Access database and N6 Content Analysis software.

Scalability and transferability

PDP systems operating within one part of one organisation may not be economically sustainable; however, monumental single or multi institution systems can alienate users. It is when systems and approaches come together with a critical mass models may emerge with applicability across a range of situations. PDP is no an exclusive HE activity! Our PDP has been designed to support fully embedded or freestanding approach with only minor tweaking.

Whatever the level of operation help is required to ‘market’ as a concept and system to staff and students. It takes time for staff to understand how to interact with PDP and harder still to embed PDP within large or even small scale curriculum design. At the University of Plymouth a set of PDP standards have been adopted and a set of PDP guides produced:

01: Introduction to PDP
02: Curriculum design and PDP
03: Working with PDP; questions for…
04: Strategic PDP Questions
05: Explaining and promoting PDP to students
06: Finding out about PDP: resources and examples

07: Supporting the Use of Electronic PDP (ePDP)
Stone M. & Burkill S. (2003/4) Personal Development Planning Guides, University of Plymouth

The hardest PDP development issues are how to:

- embed PDP systems and activities
- get staff to see PDP as contributing to the learning experience and their teaching and not as extra work
- engage students with PDP without detracting from their subject
- adding PDP friendly activities to modules while not detracting from such work within modules where it already exists

Curriculum design is at the root of all these issues; this includes the logistical aspects of curriculum development and the pedagogic literacy required to design elegant solutions.

10 'Graduateness'

PDP modules allow the student to explore the concept of personal development within their courses, the workplace and their private life. Students deal with both the practical and theoretical aspects of personal development including the concept of an escalating level of development linked the stages of their courses.

PDP 110 Threshold Assessment Criteria	PDP 210 Threshold Assessment Criteria
Knowledge and understanding: understands and demonstrates competence in the personal development processes and techniques introduced in the module study programme **ICT:** Can access and collect information from a range of sources, and organise and manage information, with guidance **Numeracy:** Can apply given numerical methods accurately **Communication:** can communicate in appropriate format(s) **Interpersonal and teamwork:** can work with others as a member of a team, and mostly meet obligations to others (for example tutors and colleagues) **Self management & professional development:** can take some responsibility for own learning with appropriate support; has begun to recognise own strengths and weaknesses within criteria largely set by others	**Knowledge and understanding:** has a detailed knowledge of the major theories of the discipline(s), and an awareness of a variety of ideas, concepts, and frameworks **ICT:** selects appropriate information from a range of sources, and organises and manages information appropriately, with minimum guidance **Numeracy**: chooses appropriate numerical methods and applies them accurately **Communication:** communicates effectively in a manner appropriate to the discipline **Interpersonal and teamwork**: interacts effectively within a team, giving and receiving information and ideas and modifying responses where appropriate **Self management & professional development**: takes responsibility for own learning with minimum direction; evaluates own strengths and weaknesses, challenges received opinion and develops own criteria and judgement

The curriculum design for the PDP modules is linked to a range of University policies and initiatives; particularly focused on achieving defined and enhanced levels of graduate capability and performance

in the workplace. Key to the curriculum design has been the embedding of Graduate Attributes and Skills (GAS).

The two PDP modules were created to give students 'level' one and two or first and second year undergraduate learning opportunities and experiences. The modules incorporate both academic challenges and skills development elements. In terms of mapping both the range and level of attributes and skills that a graduate should be able to demonstrate, the University of Plymouth used a modified model of GAS derived from the South East England Consortium (SEEC) level descriptors.

The GAS outline a planned development trajectory for student skills and attributes towards graduation. Outlined above are the level one GAS embedded within the PDP 110 and PDP 210 modules; including the threshold assessment criteria for each.

Students are asked to estimate the level they are working towards based on the level descriptor. Many students, especially mature students will have experiences that will exceed the level one standard. For example we had one student described his role as second in charge of a group that climbed to the base camp of Everest the previous summer. On the basis of this he claimed team working and communication skills at level two.

11 Content Analysis as defined and used within this study

Detailed below is a programme of content analysis research designed to further inform the curriculum and to better judge the level of student personal development and academic progression.

In order to assess how best to combine and interweave the development of generic and subject-specific competences within the curriculum this study will explore the reflective writing of students related to personal development including their previous experiences and projections of their future plans / expectations. The research methodology chosen to further this work was Content Analysis. The following methodological approach is an adaptation of a model used at Colorado State University (Anon 1997-2004).

The initial personal Development research objectives / questions that prompted this study and the methodological choice/s within it are as follows; to gain an understanding of how:

- students engage with personal development
- personal development can best be managed and supported
- personal development can best be integrated into a Higher Education curriculum
- personal development links to the development of 'graduate-ness'
- personal development relates to graduate career development and employability

Content Analysis - methodological approach within this study

Conceptual analysis has been used to establish the existence and to a lesser extent the frequency of concepts, represented by phrases, sentences and paragraphs within the analysed text. The approach taken within this study also includes an element of Thematic Analysis as the focus has been to look at the occurrence of selected concepts/categories within the text on an implicit as well as explicit basis. An attempt has been made to limit the subjectivity of judgments involved in coding on an implicit basis and hence improve reliability and validity. No specialised coding dictionary was created, but simple contextual translation rules were applied; specifically during the second round of coding based on the 'six leadership developmental steps' the key question was does this block of text provide 'evidence' of a particular 'element of personal development / progression'?

On the basis of the macro level personal development research questions identified above an initial sample set of 122 first year undergraduates within one modular degree scheme was surveyed. Data was gathered in the form of 'Word forms' used as part of personal development module assignments.

Therefore the response rate was 98%. Students were asked to respond to open ended questions targeted at generating comments covering a range of personal development experiences and opportunities including projections of their personal development plans and expectations.

The resulting responses were first entered into an Access database and from here the data set was exported to N6 content analysis software. Coding choices were then made following the **eight steps for conducting conceptual analysis** indicated by Carley (1990):

1. decide the level of analysis - *work with groups of words or phrases*

2. decide how many concepts to code for - *using pre-defined and 'developed' concepts/categories to focus on patterns that are indicative of the research question/s*
   - Round 1 coding grouped all the potential answers to each question within a group (a node within N6 software)
   - Round 2 a '*developed*' set of concepts/categories emerging from the text: evidence that students are…
     (1) Able to recognise own current level of development
         1.1. Able to recognise own current level of development - strengths
         1.2. Able to recognise own current level of development - weaknesses
         1.3. Able to recognise own current level of development - opportunities
         1.4. Able to recognise own current level of development – threats

     (2) Able to recognise personal development opportunities
         2.1. Able to recognise personal development opportunities – in PDP module
         2.2. Able to recognise personal development opportunities – in other modules
         2.3. Able to recognise personal development opportunities – in work
         2.4. Able to recognise personal development opportunities – in leisure, private or social life

     (3) Able to plan and take responsibility for own development
         3.1. Able to plan and take responsibility for own development – short term
         3.2. Able to plan and take responsibility for own development – medium term
         3.3. Able to plan and take responsibility for own development – long term
         3.4. Able to plan and take responsibility for own development – simple / isolated aspects
         3.5. Able to plan and take responsibility for own development – complex / integrated aspects

     (4) Able to demonstrate / exemplify personal development

     (5) Able to demonstrate / exemplify developing GAS in action / use

     (6) Able to demonstrate / exemplify developing subject knowledge / skills in action / use

3. decide whether to code for existence or frequency of a concept/category
   - some initial basic coding ['*development*' and '*opportunity*']
   - however, this gave a very limited perspective; not considered significant / insightful
   - focus shifted to blocks text relating to '*developed*' concepts/categories
4. distinguish among concepts and level of generalisation
   - level of generalisation was initially high
   - inclusive approach - all potential positive evidence included
   - a second iteration culled data offering no clear evidence of student reflection related to the particular concept/category
   - a final iteration culled all but the strongest evidence

5. develop rules for coding the text
    - determine the equivalence of potentially radically different and or overlapping data - the '*level of implication'* allowed
    - create translation rules to facilitate streamlined, organised, consistent and coherent coding
    - agreed code definitions enhance the validity of subsequent interpretations - by cross checking the results of researchers/coders *e.g. determining the level of personal development maturity and the corresponding academic level*
6. decide what to do with irrelevant information
    - no material remaining un-coded at any round of coding has been eliminated as irrelevant
    - text has only been treated as irrelevant to the particular round or stage of coding being undertaken
    - data remains within the N6 software; available for subsequent study re-examination, re-assessment under the existing or revised coding scheme
7. code the text - *using N6 content analysis software*
8. analyse the results of the conceptual analysis - *to suggest trends and questions for further study using relational content analysis*

PDP 110 assignment 3	Node 1 current level…	Node 2 recognise …	Node 3 plan…	Node 4 exemplify …	Node 5 demonstrate GAS	Node 6 demonstrate subject	Node 7 personal profile
3.01: Reg No	x	x	x	x	x	x	x
3.02: Which GAS							x
3.03: Context							x
3.04: Do		x	x				
3.05: Learn	x	x					
3.06: Use	x			x	x	x	
3.07: Demonstrate				x	x		
3.08: Further steps	x	x	x	x	x		

Figure 2: coding matrix sample; mapping student reflections against concepts/categories nodes

Framework method analysis (Ritchie & Spencer 1994) was used to evolve the concepts/categories. Framework guided the deeper exploration and investigation of leadership development and education - *the researchers could develop 'hunches' about how aspects of the data related to the research questions*. Framework allowed the mass of data and hunches to be organised in a structured way:

- Familiarisation
- Identifying a thematic framework
- Indexing
- Charting
- Mapping and interpretation

Relational Analysis was used to:

- further examine the relationships among the concepts/categories identified within conceptual analysis
- go beyond the presence of data aligned to concepts/categories by exploring the relationships between the concepts identified
- look for semantic, or meaningful, relationships among the individual concepts/categories

Mental Models

This study aims to build the foundations for two mental models:

- The link between and contribution of personal development (PDP) to the achievement of 'graduateness'
- The relationship between personal development (PDP) and the progression of undergraduate students through the 'levels' of their education

'Mental models are groups or networks of interrelated concepts that are thought to reflect conscious or subconscious perceptions of reality. According to cognitive scientists, internal mental structures are created as people draw inferences and gather information about the world.' (Anon 1997-2004).

12 Initial analysis of student reflective personal development writing

These initial results offer some cause for optimism in that undergraduates are able to differentiate and see the breath of appropriate leadership styles at all levels, not just at the head of an organisation.

Shown below are sampled student quotes from the Content Analysis described above, mapped against the initial set of personal developmental concepts/categories:

Able to recognise own current level of development

Before attending university I believed my level of literacy to be of a high standard, yet now I'm at university it has become clear that this may not be so. …I'm finding it more difficult to understand the work of others e.g. articles in journals. I can confidently express my ideas and thoughts, it only becomes difficult when I'm not 100% certain of what my idea is in my own mind, and find it easier to explain if the recipient has a basic understanding of what it is I'm writing.

I am able to analyse numeric data and draw conclusions from it as I enjoy problem solving. To a certain extent, I am quite capable in presenting information in the form of charts, tables and graphs. I may come across some minor obstacles as I haven't used those forms of software recently.

Able to recognise personal development opportunities

This assignment to improve my computer literacy skills and I feel that it has made me more confident when using computers. To meet GAS level 1 I feel that I need to spend more time orientating myself around a computer, becoming more proficient with the applications I intend to use and not being "flustered" by having to ask for help if and when it's needed.

Able to plan and take responsibility for own development

One area I need to improve on is expressing myself more clearly because sometimes in assignments and when talking to people I feel as though if I had said something else it would make more sense. To develop these skills I feel I should spend more time going through pieces of work and seeing how I can change word, sentences or paragraphs to make them easier to read. I also find when reading other peoples work that they could have expressed themselves differently to get the point across more clearly.

Able to demonstrate / exemplify personal development

…one of the main emphasis's of the Nutrition module is to learn how to eat a healthy balanced diet, before I started this mini pathway I thought that I led quite a healthy life, well it turns out that it wasn't so healthy after all! Not only do you need to eat healthy, your life style has to be healthy as well e.g. lots of exercise and a well balanced diet, not dieting! Because of this knowledge, I now attend circuit training twice a week and try not to waste my money on junk food! One of my friends was trying to loose weight but was stupidly dieting too much and not taking in essential nutrients, she was doing no exercise at all. I explained to her what I had learnt and now she attends circuits with me and consumes a balanced diet. Therefore, I also feel that this mini pathway has enabled me to help other people, which I find very satisfying.

Able to demonstrate / exemplify developing GAS in action / use

Two future assignments ...will require need to undertake involvement in group presentations. With the experience I have gained in group work from my business module assignments, is that I will choose my team members very carefully and make sure that all work to be done is organised in an appropriate structure. This will also determine whether choosing your own team members is more effective than teams being put together for us. Within these two next assignments I will make sure that tasks are delegated in order for workload to be fair. It is important that myself and the other team member who compiled most of the work for assignment two, to be more supportive in order for a greater level of involvement. Although it is important to have effective leadership it is also of importance to have a balanced consensus from all group members, therefore gaining a wider base of ideas. By using this approach a wider number of opinions can be sort in order to achieve more widespread opinions.

Able to demonstrate / exemplify developing subject knowledge / skills in action / use

For this pathway I have been able to understand the process and theory, elements and design of property. This can be seen in evidence on the assignments 1 which deals with landscape surveying and design a building suitable for the public use using technical drawing to illustrate the results. I have been on site performing a practical aspect of surveying chain measuring and level grid surveying then recording data on charts and tables. I have also learned about the building elements, design and construction practices. For the second assignment I have designed a barn conversion for a development project using scale drawings to illustrating where, what building materials and layout it should take using different elevations.

13 Developing the understanding, developing the methodology

We are only just starting to explore the extent of student personal development understanding and capabilities beyond the usual assessments made in terms of:

- student marks
- student feedback
- employment statistics
- employer feedback
- anecdotal returning student feedback

While all these are valuable sources of information and commonly inform course and curriculum design, it is genuinely complex to test the engagement with an approach to learning and development. Further refinements to the methodology; especially the questions asked and content analysis will certainly emerge with deeper exploration of the data. In addition, comparative studies are planned with students undertaking PDP including those at Bournemouth University.

14 Concluding discussion – and emerging mental model

Analysis of the data offers an insight into an emerging student vocabulary / language of personal development. Taking a qualitative overview of the student reflective responses shows that the answers fall all into three further developmental stages of learning:

1. vocabulary / language of **Experience**
2. vocabulary / language of **Study**
3. vocabulary / language of **Practice**

The majority of students were able to offer clear and focused reflections on their personal experiences of development in a wide range of settings / contexts including work, education and personal situations. Slightly fewer student responses were offered for how they felt their own practice of personal development had, was and would develop. The evidence provided was less focused and language used less detailed. However, there is much to be reassured about in the seriousness with which students write about their personal development.

PDP is not about restricting or defining a 'personal development curricula' as a simply taught and examined generic skills-set. If we are to challenge students to embrace PDP, we must discuss and share between staff and with students the ideas and concepts that underpin the way in which learning in HE is designed and delivered. PDP is about working toward personally specific and targeted development within the wide ranging learning and development opportunities that education, work and our private lives afford. Therefore the focus on PDP within HE should not be one of 'delivery' as PDP activity is this increasingly something that will be talked about, experienced and required before entering HE and within work. However we should be aiming to facilitating students to mainstream personal development activity within their Higher Education.

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Developing generic and subject-specific competencies of graduates: one or two separate issues?

Ana Pešikan

Institute of Psychology, Faculty of Philosophy, University of Belgrade, Serbia and Montenegro

zavram@EUnet.yu

Abstract

We are facing the fact that some of the teaching that is performed at university level does not result in effective learning. The basic reason for this is that our faculties are often places for delivering lectures and exercises, instead of being, as they should, *learning places*.

In the context of the Active Learning Project (ALP) described in this paper, a *learning place* implies:

- that the student should be put in a situation so as to actively construct his/her professional knowledge and skills;
- that contemporary instruction is an interactive process and active learning/teaching methods have to be used;
- that the methods and the content of teaching are inseparable;
- that the key issue is what students are doing during instruction, i.e. in what kind of activities they are involved. The teaching situation has to be designed and created in such a way that students are involved in activities relevant for the subject and discipline. If we want to achieve both knowledge and skills of the given discipline and the professional model of behaviour, the activities specific for a certain scientific field must necessarily be involved.

The involvement of students in relevant activities has several important implications, some of which are:

- The development of general and subject-specific competences of students in graduate programmes is not two issues but one and the same process. Students who are occupied with different activities within a specific subject are developing at the same time very important general intellectual skills.
- No matter what the subject or discipline is, we have at our disposal not only one method but a whole continuum of methods. Which methods will be optimal depends on the content and the aim to be realised in the subject. Which methods will be used more frequently primary depends on the nature of the discipline.
- Teaching quality evaluation is performed in another way. The quality of content and the quality of teaching/learning methods should not estimated separately in such as way an subject-specific expert evaluates the correctness of the content and an expert in pedagogy evaluates adequacy of the teaching methods which are used in the work with students. Instead evaluation of the teaching/learning process should be performed primarily through the analysis of the students' activities in the class. The special technique of sequential analysis has been developed within the framework of ALP for this purpose.
- The roles of teachers should change. The teacher should not be just a lecturer, but much more a designer of teaching/learning situations that involve the students in activities relevant for the subject. In preparing for the class the teacher should be thinking about how to conceptualise the teaching process to "force" students to be engaged in the content in such a way as to reach the desired set of knowledge and skills.

- Teacher's preparation must also be different. Teachers at university are primarily experts in their subject. But they are also teachers; they have to build a bridge between the discipline and students. The actual problem is the fact that at a number of universities throughout the world teaching staff receives no preparation for working with students. And even when some kind of preparation for the role of teacher does exist, the question arises as to what kind of preparation. In the ALP concept teachers are trained to make *scenarios* for their classes. The teacher should become a director who is creating different situations in which the students are the main actors, i.e. they are put in roles in which they participate in relevant activities and achieve given goals.

1 Introduction

All efforts in education are focused on what we want the students to learn. Objectives indicate what we want to accomplish as a result of our teaching. They are "explicit formulations of the way in which students are expected to be changed by the educative process" (Anderson & Krathwohl, 2001, p.3). Educative objectives cover two important aspects: *what* and *how* we will teach our students. Teachers teach their students things that are judged as worthwhile by professionals and society. The learning environment, activities and experiences that teachers provide and create for students tell us how teachers have been helping their students to reach the objectives.

When we start to discuss the question of which skills the graduates would need when entering the working environment, two questions arise: what type of students' competences has to be developed and how can the necessary skills be developed during their degree programs at universities and faculties.

The problem of both the *content* (which has to be selected) and the *method* (which has to be applied) in teaching process at the university has to be addressed in order to be effective and to qualify the graduates to meet both their needs and the future needs of society and industry.

2 Active Learning Project as theoretical and practical background

We are facing the fact that some of the teaching that is performed at the university level does not result in the effective learning. The term effective learning means that students should master the basic knowledge and skills of certain discipline. In other words they should be able to implement these knowledge and skills in novel situations, in solving problems or in making professional decisions.

In this paper the background for examining the teaching and learning processes is provided by the *Active Learning Project - ALP* (Ivić, Pešikan, Antić, 2003[1], Pešikan, 2003). Since 1994 ALP has been developed at the Institute of Psychology, University of Belgrade by this team and with a wide network of collaborators.

The primary aim of the ALP project is to change the methods that are used in education from predominantly lecturing to active and interactive forms of work. The original hypothesis was that changing of the methods of work would consequently change two other things; firstly, the quality of knowledge and skills (which students have got through schooling) would improve, and secondly, the status of learner will be changed from the position of recipient of knowledge to the position of an active constructor of one's own knowledge. The main forces driving this change are teachers and educational specialists.

[1] See: www.aktivnoucenje.eforum.eu.org

Therefore the key reasons for developing this type of project can be described as:

- Changing the culture of passive learning (as a result of strict lecturing, ex-cathedra form of work, with emphasis on memorization and rote learning, on learning facts and not (or much less) to acquiring skills that allow knowledge to be applied in novel situations) which often prevails in school and faculty practice;
- Changing the unsatisfactory educational outcomes: low student achievement, and (especially) low level of acquired skills and general intellectual strategies of work;
- Changing the status of the student from the position of the recipient of knowledge to the position of an active co-constructor of his/hers knowledge in asymmetric interaction with teacher;
- Improving the pedagogical interaction student – teacher and student – student;
- Developing democratic learning climate; and
- Increasing learning motivation in students, this has suffered considerably over the years.

The ALP concept has the following basic characteristics:

(1) Socio-constructivist concept of learning (Pešikan, 2003):
- Learning is a *construction of knowledge*, the construction being done by the person who learns. Knowledge cannot be transferred directly to anybody, but has to be built by learner's own mental effort.
- Learning is by its nature an *interactive process*. When we say interaction we dominantly think of the interaction involved in the construction of knowledge. It could be the construction of knowledge through an asymmetric interaction student- teacher; circulation and exchange of the knowledge, experiences and ideas among students; communication of students with the learning environment, especially with instructive materials (i.e. textbooks).
- The student and the teacher are in *asymmetric interaction*. The teacher is a leader, initiator and guide of class activities. He is a partner and co-learner with the students, but a partner who is at a higher level of development (more experienced) then the students. (Teachers, of course, teach more then they learn from the encounter, and students learn more than the teachers from the same encounter).
- The learning is *domain-specific* and domain-dependant. Although there are general cognitive strategies and skills which are relatively domain-free, context-free general learning is not as such. Strategies, procedures, principles of learning in a specific discipline, domain (science, mathematics[2], etc.) and the transfer of knowledge and skills (Wittrock, 1998) are closely connected with the specific content. Research data implies that transfer of strategies in solving problems is very limited and that both quality of solving problems and other type of cognitive activities are *content-based knowledge,* i.e. they depend on a knowledge of a specific domain and subject (Cole, 1990).
- Vygotsky states: 'mind is not a complex network of (general) abilities but a set of specific abilities. Learning means *mastering of many specialised abilities of thinking*" (Vygotsky, 1977, p 83). In schooling the child meets the structured systems of knowledge (systems of scientific concepts). Each subject as a system of knowledge contains in itself a certain and mainly specific method of thinking and stimulates the specific activities of learners. So method of thinking is not the same when historical, mathematical or scientific activity is being discussed. Because of this "Objectivity is an inseparable feature of activity," (Shchedrovitsky, according Ivić, Pešikan, Antić, 2003, p. 179).

[2] See: Spiro & Jehng, 1990, Wittrock, 1998, Kadijević, 1993, Martin, 1990, Dowley McNamee, 1990, McLane, 1990, Rueda, 1990, Olson & Torrance, 1996

- Our knowledge of reality is built on the social constructs created by the society from which we originate. Therefore, learning is more *a type of a social activity rather than an individual one*. We learn from other people and they learn from us. Essentially, learning is an exchange of one's view of reality (content) with that of others, gradually refining one's own understanding (Jacobs & Gawe, 1996).
- Learning has to take into consideration the typical characteristic of human development and consequently leave room for the expression and development of individual characteristics (has to be idiosyncratic).

(2) A shift from a programme to a learning/teaching process and its effects. In ALP the syntagm learning/teaching is used because we want to emphasise that these two processes, learning and teaching, are indivisible and complementary. In our view it is same concept with two facets: *it is learning* from the point of learners, and *it is teaching* from the point of view of teacher. The syntagm learning/teaching also points out the close interdependency and causality of learning and teaching: whatever happens at one end (segment) of the whole directly models the functioning of the other segment.

(3) A shift from a teacher-centred to a student-centred instruction i.e. from what the teacher is doing to what the student is doing. If the aim of the teaching process is primarily to facilitate student learning, and if the learning process is a construction (not accumulation) of knowledge, then student's class activities should necessary be the focus the interest. This implies redefining the programme for students (what should be expected from students, what they would be able to do with the content as a result of a teaching), as well as redefining of the teacher's role. It also implies changing the way of evaluating the teaching process and student's acquirement.

(4) The renewed conception of students' activities. The key concept of students' activity has been worked out in the light of Piagetian's concept of active construction of knowledge and Vygostky's concept of common activities, i.e. co-construction of knowledge in the process of asymmetric interaction student – teacher in addition to other theoretical analyses. On the basis of all analyses and elaboration, we revised the definition of students' activities in the learning process. The characteristics of the student's activities are as follows: (a) we are dealing with primarily internal, mental activities; (b) there is a continuum of activities from less complex to very complex; (c) activities are heterogeneous (from learning by heart to solving problems or divergent learning); (d) they are domain-specific, i.e. they could be challenged only by specific subject.

The last characteristic is a crucial one. In the learning process students meet different intellectual problems (historical, biological, chemical, etc.) and in coping with these problems they are developing specific types of activities. The activities that the student is involved in (during the process of learning at school) are not isolated activities stemming solely from an individual's sheer interest. These activities are always and unavoidably activities with an object of cognition, and are produced in the encounter and confrontation between a subject of cognition and an object of cognition. In the school vocabulary this means that the activities in the learning process are activities which are in real inter-action with the structured intellectual contents of each school subject. This are why these activities in the process of learning at school have acquired the character of definite activities, such as artistic, mathematical, literary, biological, physical, etc. This is called the *objectivity of activities*. Student's activities are inseparably linked to the nature of the content of that activity. The object of activity is a convergence of the structured contents and models of activities, of models of thinking and beliefs, which are contained in individual school disciplines.

Therefore, we need to add one important component to the concept of student activity in the learning process: that the activities are *organised and structured*. In other words, learning at school is a highly

institutionalised activity which performs in specialised institutions - schools[3] - which, as such, constitute a separate ecological niche shaped by the culture in which life and work perform in a particular way. The latest book of Jerome Bruner (Bruner, 1996), in which he talks about the "school culture," specifically deals with the firm roots that school and learning at school have in any culture. Thus, we can say that student's activities are highly institutionalised activities, deeply rooted in the culture, within which the person in learning is engaged in interaction with structural systems of knowledge and values (Ivić, Pešikan, Antić, 2003).

(5) Enabling and improving team work among teachers and other education specialists in a phase of preparation and realization of active learning/teaching classes.

(6) Developing democratic learning climate in class through encouraging and, eventually, protecting independent thinking, the self expression of every member of the class, open-mindedness and tolerance toward differences; developing interaction[4] and team spirit among teacher and students; and offering and consulting a variety of resources (teacher is not the only source) and empowering communication of students with knowledge, not only with teacher.

3 What type of students' competencies should be developed?

The title of the paper contains two key words: students' competences and the development of these competences. These key words prompt the questions: what competencies we are talking about and what preconditions are needed to enable their development.

In terms of competencies we can separate two dimensions, which are crossed (Anderson & Krathwohl, 2001): (1) the knowledge dimension and (2) the cognitive process dimension, each of them having the sub-categories (Table 1).

Table 1: Knowledge and cognitive process dimensions.

THE KNOWLEDGE DIMENSION	
Major types and subtypes	*Definitions and examples*
Factual knowledge	The basic elements which students must know to be acquainted with a discipline or solve problems in it.
Knowledge of terminology	Technical vocabulary
Knowledge of specific details and elements	Major natural resources, reliable resources of information
Conceptual knowledge	The interrelationships among the basic elements within the larger structure that enable them to function together.
Knowledge of classifications and categories	
Knowledge of principles and generalizations	
Knowledge of theories, models, and structures	
Procedural knowledge	How to do something, methods of inquiry, and criteria for using skills, algorithms, techniques, and methods.
Knowledge of subject-specific skills and algorithms	

[3] S*chool* is used here to include all types of schooling institution - different types of school as well as different level of schooling.

[4] "The most important single factor influencing teaching and learning, is the establishment and maintenance of an interactive situation between teachers and pupils and among the pupils themselves in the classroom" (Jacobs & Gawe, 1996, p. viii).

Knowledge of subject-specific techniques and methods	
Knowledge of criteria for determining when to use appropriate procedures	
Metacognitive knowledge	Knowledge of cognition in general as well as awareness and knowledge of one's own cognition.
Strategic knowledge	Knowledge of outlining as a means of capturing the structure of a unit of subject matter in a textbook, knowledge of the use of heuristics.
Knowledge about cognitive tasks, including appropriate contextual and conditional knowledge	Knowledge of the types of tests particular teacher administers knowledge of the cognitive demands of different tasks.
Self- knowledge	Knowledge that critiquing essays is a personal strength, whereas writing essays is a personal weakness; awareness of one's own knowledge level.

THE COGNITIVE PROCESS DIMENSION	
Categories & cognitive process	*Definitions and examples*
Remember	Retrieve relevant knowledge from long-term memory.
Recognizing (identifying)	Locating knowledge in long-term memory that is consistent with presented materials (e.g. recognise the dates of important events in U.S. history).
Recalling	Retrieving relevant knowledge from long-term memory (e.g. recall the dates of important events in U.S. history).
Understand	Construct meaning from instructional messages, including oral, written, and graphic communication.
Interpreting (clarifying, paraphrasing, representing, translating)	Changing from one form of representation (e.g. numerical) to another (e.g. verbal).
Exemplifying	Finding a specific example or illustration of a concept or principle.
Classifying (categorizing, subsuming)	Determining that something belongs to category.
Summarizing (abstracting, generalizing)	Abstracting a general theme or major point(s), writing a short summary.
Inferring (concluding, extrapolating, interpolating, predicting)	Drawing a logical conclusion from presented information.
Comparing (contrasting, mapping, matching)	Detecting correspondences between two ideas, objects, and the like (e.g. compare historical events to contemporary situations).
Explaining (constructing models)	Constructing a cause-and-effect model of a system.
Apply	Carry out or use a procedure in a given situations.
Executing (carrying out)	Applying a procedure to a familiar task.
Implementing (using)	Applying a procedure to an unfamiliar task.
Analyse	Break material into its constituent parts and determine how the parts relate to one another and to an overall structure or purpose.
Differentiating (discriminating, distinguishing, focusing, selecting)	Distinguishing relevant from irrelevant parts or important from unimportant parts of presented materials.

Organizing (finding coherence, integrating, outlining, parsing, structuring)	Determining how elements fit or function within a structure.
Attributing (deconstructing)	Determine a point of view, bias, values, or intent underlying presented materials.
Evaluate	Make judgments based on criteria and standards.
Checking (coordinating, detecting, monitoring, testing)	Detecting inconsistencies or fallacies within a process or product; determining whether a process or product has internal consistency; detecting effectiveness of a procedure as it is being implemented.
Critiquing (judging)	Detecting inconsistencies between a product and external criteria, determining whether a product has external consistency; detecting the appropriateness of a procedure for a given problem.
Create	Put elements together to form a coherent or functional whole; reorganise elements into a new pattern or structure.
Generating (hypothesizing)	Coming up with alternative hypotheses based on criteria.
Planning (designing)	Devising a procedure for accomplishing some task.
Producing (constructing)	Inventing a product.

In the education process there are different categories of cognitive knowledge and skills that should be considered. What are categories that one will insist on and to what degree do they depend on the nature of the discipline and the concrete desired objectives of the instruction. The tables clearly show that the content of a discipline is interwoven with the cognitive categories.

Turning now to the aims of education at the Faculty of Agriculture, these include a lot of the above mentioned cognitive categories, formulated from the angle of the discipline. The aim of Faculty of Agriculture[5] is to educate and create a professional who should acquire the following:

- Contemporary knowledge in the field of agronomy;
- Ability to work on development of agriculture and food technology;
- Ability to implement the knowledge of producing and processing food;
- Ability to present her/his own knowledge and skills;
- Ability to present some professional knowledge in a popular way to non-professionals;
- Ability to communicate with others, to lead argumented dialog, to develop social skills;
- Ability to communicate with the public especially in the scope of risk-communication;
- Ability for team work, to work together with others professionals from related disciplines;
- Managerial abilities, skills to profitably manage human and natural resources;
- Ability to follow and implement innovations in profession, ability to advance the knowledge and skills permanently and live in a "community of learners" (B. Rogof);
- Ability to use different sources of information independently as well as ICT.

Undoubtedly we would agree over the majority of above-mentioned competencies, some of them being basic and crucial for the future graduate. It is clear that although a great number of them do not fall into the professional category, they are necessary as part of the general competencies (e.g. social skills).

[5] These aims were listed by the professors of Agriculture faculty on their Active learning seminar in Belgrade, 28-30 August 2003 (see: Poleksić et al., 2004).

Therefore it is obvious that there is interweaving of general and subject-specific competencies. For this reason different teaching situations have to be designed and different methods have to be implemented to enable students to develop and exercise necessary competencies and reach the aims set in a graduate programmed.

4 Faculty should be a learning place

Common sense tells us that the faculty is a learning place. But, if we look more closely, in practice a lot of things (from the building construction and physical organization of building to the type of instruction and dominant methods of teaching) show us that a faculty is a place for giving lectures rather than a place for learning.

There can be no doubt that the representativeness and contemporary content of any given discipline is necessary, but insufficient conditions for an effective teaching process are provided in the modern concept of a university. One of the main European documents about university reform, the Bologna Declaration, could be understood in a good sense as a tendency of turning a faculty from the place for giving a lecture or exercises to the place for learning. This is underlined by the emphasis placed on what students should be doing within specific subject i.e. how they are earning credits during their studies.

From the viewpoint of the Active Learning Project (ALP) when we say a *learning place* it means that:

- The student should be put in a situation so as to actively construct his/her professional knowledge and skills (which is a necessary consequence of defining learning as a construction of knowledge)
- The contemporary instruction is an interactive process and active learning/teaching methods have to be used. The teaching/learning methods are the main devices for promotion of "culture of learning" at a faculty (Pešikan, 2003);
- The methods and the content of teaching are inseparable (Ivić, Pešikan, Antić, 2003; Poleksić et al., 2004);
- The key issue is what students are doing during instruction, i.e. in what kind of activities they are involved. The teaching situation has to be designed and created in such a way that students are involved in the activities relevant for the subject and discipline. If we want to achieve both knowledge and skills of the given discipline and the professional model of behaviour, the activities specific for certain scientific field must necessarily be involved. The term r*elevant* implies a number of things: that activities are relevant for a subject, for the domain which is studied, for aims (which have to be realised at that education level), and for objectives (which we want to accomplish by some classes, or blocks of teaching).

In the case of Active Learning the major aim of any active/interactive teaching unit is to achieve a teaching situation in which as many students as possible are doing as many relevant activities as possible for the longest possible time in realizing the goals of the class.

Setting students in relevant activities has several very important implications on the teaching/learning process:

- Development of students' general and subject-specific competencies in graduate programmes is not two issues but one and the same process. Students who are occupied with the different activities on specific subject are developing, at the same time, very important general intellectual skills. For this reason the transfer of knowledge and skills to novel situations is empowered meaningfully.

The results of numerous metacognitive researches[6] carried out in psychology during last decades of the 20th century also support taking into consideration the importance of developing students' competencies, both general and specific, on specific content. The previous wave of metacognitive researches during seventies and eighties century was based on the illusion that content is not important in the development of strategies for solving intellectual problems. It was believed that strategies trained on "neutral" materials could be simply transferred to all other specific domains of acquiring knowledge. But, as was realised recently, the transfer of some general strategies of intellectual work on specific subjects is very difficult and disputable (Alexander & Murphy, 1998). Therefore, the new wave of research turns from development of metacognitive skills "in general" toward development of metacognitive skills "on specific materials", in specific subjects (science, literature, etc.). These data support our thesis that the methods and the content of teaching are inseparable and the best way for achieving their unity is through the students' relevant activities in the classes.

- Regardless of what subject/discipline is, there is not just one method available at our disposal, but the whole continuum of methods. Which methods will be optimal depends on the content and the aim that has to be achieved in the given subject (e.g. if we want to learn Latin names for subject terminology, the best way will be learning them by heart. But if we want to learn how to make decisions, performing small independent investigations/research will be the best method). Which methods will be used more frequently primarily depends on the nature of the discipline (e.g. dominant method in history would be verbal receptive meaningful learning, but in agronomy problem-solving and/or laboratory and experimental work would be the method of choice).

- Quality evaluation of teaching is performed in different way. The quality of content and the quality of teaching/learning methods should not be estimated separately by an expert for the

[6] The effective human learning supposes that man is aware of his own learning process, that he/she has the ability to think about the process, to evaluate its characteristics and successfulness, and finally, to monitor and control it. One should be able to monitor one's own cognitive functioning from *meta* position. This ability is called **metacognition**. In spite of numerous terms which try to signify one's ability to think about ones own thinking process, "thinking about thinking" could be summarised as: *knowledge* about one's own cognitive functioning; *abilities* of planning, repeating, self-control, checking, monitoring, and self-regulation of one's own cognitive functioning (the knowledge about cognitive strategies and abilities is not necessary explicit); and ability of self-evaluation and evaluation of successfulness of cognitive functioning (Brown, 1975, Flavell, 1976, Marzano, 1998, Boekaerts i Simons, prema Hamers i Overtoom, 1997, Ivić, 1992).

Initially metacognitive researches were focused on the development and training of the strategies of mental work regardless of the scientific discipline and subject of the training in which these intellectual exercises were performed. After some time it became obvious that the strategies were not the same depending on what subject the training was performed. This new series of research pointed out the problem of transfer of cognitive and metacognitive strategies from one discipline to another. During 1970s 1980s, in the time when the greatest volume of metacognitive research was done, the researchers believed that "thinking about thinking" would change students' learning significantly and longitudinally. But, unfortunately, all these hopes failed to materialise. Strategic processing (being aware of the weak and strong sides of one's own mental functioning, knowing one's own strategies of work, monitoring, control, regulation and self-evaluation one's own learning process) is a necessary but not sufficient condition of effective learning (Alexander and Judy, 1988, Garner, 1990). Strategic processing has to be coordinated with other factors. Learning of cognitive and metacognitive strategies could not be expected to affect the quality of learning (Alexander and Murphy, 1998) if some previous conditions are not fulfilled - if the training is done within limited area, if it is not repeated from time to time, if (in the process of learning) attention is not paid to transfer of knowledge to new situations; if strategic processing is not supported by teaching aims and class climate; and if a student does not understand the value and importance of the strategies which are trained.

subject area evaluating the correctness of the content and an expert in pedagogy evaluating the adequacy of the teaching methods that are used in a work with students. Evaluation of the teaching/learning process should instead be performed primarily through the analysis of the students' activities in the class. The special technique of sequential analysis[7] has been developed within the framework of ALP for this purpose (Ivić, Pešikan, Antić, 2003, Ivić, Pešikan, Antić, in paper).

- The roles of teachers should also change. "Teaching which reduces the learner to an empty vase into which the teacher pours content and expects the learner pour it out at testing time" (Jacobs and Gawe, 1996, p. 2) is not acceptable. The teacher should not be just a lecturer, but rather a designer of teaching/learning situations that involve the students in relevant activities for the subject. In preparation of the class the teacher should be thinking about how to conceptualise teaching process in order to "force" students to be engaged in the content in such a way as to reach the desired set of knowledge and skills.

- Teacher's preparation also has to be different. Teachers at university are primarily experts in their subject. But they are also teachers; they have to build a bridge between the discipline and students. The actual problem is the fact that at the numerous universities throughout the world teaching staff receive no preparation for the work with students. They accomplish this work either by imitating their own teachers or by relying on their own skilfulness and talent[8]. And even when some kind of preparation for the role of teacher exists, a question arises as to the form of this preparation. In the ALP concept teachers are educated to make *scenarios* for their classes. Teacher should stop playing the main role, and to learn to become a director, creating different situations during which the students are the main actors, i.e. are put into roles in which they participate in relevant activities and achieve given goals.

5 Conclusion

It is unimaginable nowadays that a professional could be a good expert just by knowing the subject of his/her discipline. The real professional has to accomplish much more. Conditions of modern life and work require numerous different skills that will enable one to achieve a better usage and implementation of acquired knowledge in a social surrounding and enable one to better meet the needs of society and industry/economy.

As the education is direct preparation for professional life, it is very important that during the graduate studies the necessary competencies should be developed at specific subject level of a given discipline. It will require change in a lot of things in faculty organisation as well as in methods and flow of instruction at a faculty. Faculty should be a place for learning, i.e. a place that is prepared and organised in such a way as to enable students' learning and to make it easier.

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[7] The *sequence* is the smallest meaningful unit, which describes the learner's activity. In the sequentional analysis of class, first the sequences of class are picked out and defined. The flow of sequencing starts with defining the borders of the sequences and the function of each sequence; then recognizing included activities and relevance of these activities for the sequence and for the goals of the class. When the class is divided into the sequences then we can discuss quality of realization of each sequence, its function in the class and whether we need given sequence at all, and some possibilities of combinations of the sequences in the class design.

[8] An exception to a rule is KVL University in Copenhagen where organised training for assistant professors regulated by law exists.

The key points of this paper are following:

- The active learning/teaching methods are needed as a device for developing the required generic and subject-specific competencies in degree programmes;
- The key issue is what students are doing during instruction, i.e. in what kind of activities they are involved;
- The teacher has to design teaching situations during which students are involved in relevant activities for both subject and aims of the discipline;
- This should be the way of teaching/learning students to acquire transferable and usable knowledge and skills;
- Creating these necessary teaching situations requires teamwork of both professors (experts in different subjects) and experts in active learning methodology (psychologists, pedagogues).

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Merging quality increase and soft competence

Peter Braun

Royal Veterinary and Agricultural University (KVL), Dept. of Agricultural Sciences, Copenhagen, Denmark.
(Present address: Research Institute Geisenheim/University of Applied Sciences Wiesbaden, Germany

braun@fa-gm.de

Abstract

The joint horticultural study programme between Denmark and Sweden, which developed during the 1990´s and started officially in autumn 2001 allowed for a total rethinking of the content and structure of the programme. The decision for block courses, relatively large integrated courses, starting with an introductory course in horticulture followed by basic science courses and building teacher teams was taken to increase the quality of the study programme and turn it from national programmes given in local languages into an international programme in English. However, the new structure inherently incorporated the build-up of soft competences. This in the beginning "accidental" process was later on during the fine-tuning phase of the programme turned into a more conscious process where quality increase and build-up of soft competences is seen as belonging together rather than being conflicting aims.

1 Background

In the 1990´s the idea of a closer cooperation in the field of horticultural education developed in Scandinavia. With the planning of a bridge between Denmark and Sweden, which reduced travel time between the Danish and Swedish sites for horticultural education to about an hours drive, the idea of the Danish-Swedish Horticultural Science Degree Programme (DSH) formed. The actual planning of courses started in 1999 with the degree programme starting in autumn 2001 with the first uptake of students.

The basic idea of totally integrating the two study programmes into one, letting both teachers and students move between the two locations and involving teachers from both countries into nearly each course allowed and forced a total rethinking of the study programmes. In addition, it was decided to develop both the Bachelor and the Master programme in English and use this as a basis for a clear international focus of the study programme. The following paper concentrates on the Bachelor programme. For more information on the history and current structure of DSH see the accompanying paper on DSH in this volume.

2 The programme structure

The two involved universities, the Royal Veterinary and Agricultural University (KVL), Copenhagen, and the Swedish Agricultural University (SLU), Alnarp, are indeed located very close to each other. However, the university culture turned out to be very different. The status of a teacher within his/ her university, payment method and organisational structure all were quite different. Nevertheless, a common feature was that both partners already had a considerable focus on teacher training. This allowed for very good discussions and an open mind to new and maybe unusual ideas.

The key features of the resulting programme structure were:

- Plant in the centre of the education
- inter-disciplinarity through larger courses with teacher teams
- starting the study with horticulture, not with basic science
- fully blocked modules, that is, only one course at a time

- two full obligatory years and elective courses plus BSc thesis during the third year

The focus still was on quality in a subject context, which was achieved by a continuous build-up of knowledge and understanding during the first two obligatory years. Courses were building on each other starting with an introductory course and general horticulture and then going more and more into detail (anatomy, physiology, chemistry) and thereafter going up in integration during the last year which ended with an ecology course summarizing and applying all the previously attained knowledge. Particularly during the introductory course, Problem-based learning (PBL) was used as a new and dominating method.

The result was that in the beginning soft competences were integrated more by accident than on purpose. It was not in focus during the initial programme development. This has changed greatly and is now a more conscious and controlled process achieved through direct discussions between programme coordinator and course responsible. Nevertheless, the new structure, although developed with a focus on quality improvement, nearly automatically lead to an incorporation of the development of soft competences. Key soft competences are now defined through discussions with future employers as:

- being able to work in a team
- being able to effectively use others knowledge and capacities
- being able to effectively discuss topics and
- being able to effectively present results.

Acquiring those key competences was achieved through

- not seeing a single teaching method as a religion, but focus on the right mix
- mix of group work, PBL, project work, hard core lecturing, exercises and seminars and
- forcing students from the first day into discussions, teamwork and presentations.

Particularly using the introductory course with PBL elements forced students from day 1 into discussions. English became not a language to understand but to communicate in. Teachers decided on which student is in which group. Students had no choice avoiding other students and the need to communicate effectively with other people even if they do not like each other, was explained and discussed repeatedly. Forcing them right from the start resulted in breaking the “entertainment culture” which many knew from school or the education system of their home country. An additional effect was that students coming from different countries were all forced into accepting a common working habit. All this was an important first step on continuously improving the soft competences during the whole study. It became more or less an established standard for the following courses which were more oriented towards acquiring fact knowledge and understanding processes.

When in hindsight trying to analyse why it was possible to merge the definite increase in quality of the study programme with an integration of soft competences, then some basic requirements can be seen. They are the above “achieved through” points which together with a willingness of most teachers to discuss developments openly formed the framework. This accepted framework was then used to build large courses where teachers formed teams coordinated by two course responsibles and a programme leader. This allowed integrating subjects within and between courses resulting in process understanding rather than a pure accumulation of fact knowledge. Having only one course at a time with a number of teachers involved also excluded in many cases standard written exams at the end of the course. Instead, ongoing exams and portfolio exams became standard which again all fostered the development of the above soft competences. Building on known knowledge and capabilities acquired during the obligatory courses, boring repetitions could be avoided during elective courses. Focusing on increasing the quality using this approach nearly automatically resulted in the integration of soft competences in the study.

However, a main point should not be forgotten. Although the development of the common study programme was decided without much or any consultation with the teachers involved, i.e. a pure top-down approach, teachers had free hands directly after the decision and all practicalities including the complete study programme were solved by the people involved. The absence of further interference from the top (indeed, clear support was signalled and practised all the way) was another essential element fostering motivation of the teachers involved which then made the very positive impression on the formation of the study.

Developing generic competencies for land managers

Ian E. Edwards and Simon B. Heath

University of Aberdeen, Aberdeen, Scotland UK

i.e.edwards@abdn.ac.uk

Abstract

Students are not taught team building or group project management which industry requires of graduates. A course that includes time management, team building and group project work has been developed. A team building day uses non academic team activities, while introducing relevant theory. Students then in groups create a Case Study for use on the WEB by European students while concurrently receiving lectures on project management. The Case is a new learning experience in their subject discipline. Individually they are required to reflect on their experience relating it to theory as part of the experiential learning. The course is well received and meets the learning objectives.

1 Introduction

The problem was that students are usually taught degree subject specific knowledge and skills although increasingly they were taught so called transferable skills which are not subject specific. These include skills such as library search, essay writing and computing software competencies, oral and poster presentation. But these are all individual skills and students particularly with the modularization of degree programs see themselves competing with each other for marks. Hopefully students also develop critical thought and show intellectual initiative!

In employment students are required to work in teams, on projects which require managing with completion to a deadline and need to manage their own time with competing demands upon them. These skills of team work, project management, and time management are dry and abstract if delivered didactically.

The challenge was to develop students' team building and project management skills, and improve their professional skills in an engaging and exciting way to a range of degree programs efficiently and effectively. The group of about 50 students in the last quarter of their penultimate year ranged over eight degree programs so relating the delivery to their degree subject was important to maintain their interest.

2 Course

Learning outcomes

The learning outcomes set for the course were that students would be able to:

- Manage their time, recognise and cope with periods of stress
- Work effectively in teams
- Manage the set up and execution of a project
- Deliver effective oral and visual presentation
- Reflect on their effectiveness and identify areas for improvement.

Course content

Course content covered:

- Initial participative lectures and seminars on Time management and Stress recognition and coping patterns
- A Team Building day outside University.
- Group Projects – subject specific
- Project Management Lectures
- Reflection Reports

3 Time Management

The Time Management involves 3 hours based on the Time Management International philosophy of the 'pine tree' of organisation to identify the components needing attention now of the important long term goals. This enables the tasks for today to be identified with motivation coming from the long term goal of which these tasks are a part. **Stress** recognition and coping patterns are based on a management consultants program.

4 Team Building

British Petroleum (BP) were concerned that the graduates they employed lacked the skills to work in teams., Chalybeate a team building training company were used to provide training programs for their staff. They decided to fund a scheme at selected UK Universities to train University staff as tutors who first went through the course themselves and to provide the resources and equipment to run these courses. Tutors are trained not to teach students but to facilitate participant's reflection on how the team performed and how as individuals they contributed to the team and to the other individuals in the team. They can introduce team building and management theory as appropriate. Tutoring is more a role of guidance than of teaching. Preferably the tutors should not be teaching staff of the students but from another department by reciprocal arrangement. This improves the honest, unhindered reflection of the participants.

Participants are randomly assigned to teams for the day. Students have commented that it would be useful to work on the day in the teams for the group projects. Random assignment means they are less likely to know each other beforehand thus the team building day is more challenging. The selection of the group projects and therefore their group project teams is just commencing at this time and as these teams are based on topics that are degree related they are more likely to know each other before hand if in their project team groups.

The activities are not physically challenging but mentally and organisationally. For example, the team is required to cross an imaginary bog, using various lengths of plank to span the gaps between small wooden platforms, while carrying a bucket of water. Complex rules ensure it requires planning and, as not all the gaps can be spanned with one plank, adaptation during the game is necessary. A time limit is set for completion.

The course which usually runs for two days has been adapted for one day with 7 activities. Between each activity the team reflects on their experience to take lessons forward to the next activity. It is run at the University playing fields with refreshments provided so students are removed from the usual University environment.

We find students are task and to a lesser extent time orientated in the activities. They respond well to reflection, some groups being particularly honest with each other. They do not always take forward successfully the lessons learned to the next activity or in facing new challenges in the next activity

they make new mistakes so the day does continually develop their team building. They appear to respond to the team work challenge and enjoy the day despite many being apprehensive before hand.

5 Group Projects

These take up the majority of the time on the course. Students make a first and second choice from a range of topics identified by staff covering the various degree programs. From this groups of 3-5 students are assigned to any one topic. Academic staff provides initial references and discuss the topic with the group.

A few **lectures** on project management theory are interwoven with the time for case work. The group initially **evaluates** existing case studies on the web so they appreciate the task they are undertaking. They then produce their own topic case study complete with links. They make an oral presentation using power point of their issue to the class. Each student individually produces a reflection report on their experience.

The **Case Studies** are those of the Minerva Project (see post conference workshop) designed to address 'Issues in European Agriculture Forestry & the Rural Environment'. These are WEB based with links to relevant information sources and other information resources provided. Each Case comprises:-

- The Issue to be considered in the case study
- The Project for European students to complete, e.g. budgets or a report.
- Case Description
- Regional Description of the area in which the case study is set to provide a background understanding for students of other European nationalities
- A Lecturers Handout to provide guidance as to the use of the Case Study in teaching.

6 Project Management Lectures

These lectures which are interwoven with the appropriate stages the student teams are or should be at cover the Project Life Cycle. This comprises the project definition, identifying constraints, developing a strategy and tasks then developing a work breakdown structure for the project. The execution, control and evaluation of the project are introduced as the project gets underway.

7 Reflection Reports

The Reflection process is a new concept for the students and the most difficult intellectually for them. To assist two intermediate reports can be submitted which are reviewed by staff and returned to the students. These are completed as individuals and are strictly confidential. The guidance they are given is to:-

- List the operational objectives for the period of the report.
- Describe what methods were used to achieve the operational objectives, the how?
- Relate what they did to the Project Life Cycle diagram.
- Reflect on their experience.
- What went right?
- What went wrong?
- How could the individual have completed their tasks better?
- How could the team have done it better?

8 Presentations

Of twenty minutes duration with five minutes for questions these are oral using Power Point. Students are given guidance notes and assistance in using Power
Point. They are advised to have no more than two of the group presenting but all should be present for questions at the end. The presentations are video recorded. A Socrates visiting lecturer who is a specialist in communication skills gives feedback to the group independent of the assessment of the presentation by the academic staff.

9 Assessment

Assessment of the course is:

- Group Case Study & Evaluation 60%
- Mark Peer Moderated
- Group Oral Presentation 10%
- Individual Reflection Report 30%

The **criteria** for the written report are 'An outstanding report displaying critical thought, analysis and evidence of relevant reading. A mark of 20 (scale 0-20) represents the best that can be expected at this stage of a candidate's career and not a perfect answer'. For the reflection report the criteria are- 'An outstandingly well organised, detailed and logical report displaying critical reflective analysis of the process undertaken and the relationship to the relevant stage(s) in the *Project Management Life Cycle*.

The mark for the team Case Study is moderated by **peer assessment** on a scale 1-3 for each of the following criteria:

- Contribution to discussions
- Contribution to planning
- Contribution to information collection
- Contribution to writing/editing of the Case Study
- Attendance at meetings
- Adaptability
- Responsiveness to comments and suggestions from other members of the Team
- General attitude to the task

10 Student feedback

From evaluation forms and discussions feedback indicates that overall the students enjoy and are positive about the course. Despite the favourable feedback on the Team Building Day many groups have difficulty working as a team on their Case Study, hence their suggestion that they are together in a group for the team building day. They do however improve and relate some of what they have learned from the team building day. Teams are very task orientated concentrating on the Case Study yet they lag on time so do learn a lot in attempting to catch up on the schedule they develop. The individual reflection reports then take second place almost being an afterthought. The best of the reflection reports are very good relating all the relevant theory of time and stress management, team building and project management to the teams work. The intermediate reflection reports and feedback do enable the teams and individuals to improve their skills as the Case develops. The Case Studies produced can be of a high standard and one with minor adaptation is now on the WEB. The presentations are good, particularly the Power Point but presenters learn a lot from the video feedback and report it is particularly useful to see themselves as when they are presenting they are concentrating on what they are saying so are not aware of how they are being perceived by the audience.

11 Refinements

The course which was originally at the start of the final year was moved to the previous term so it did not count towards honours marks. Final year students were unhappy that group work would prejudice their mark for honours. However we find the third year less receptive initially to these concepts and some students have lacked commitment to the case study. Students complain that the marks allocation does not reflect the work input. The staff argues the reflection report is the academically and intellectually more challenging hence the marks allocation. The proportion of marks for the reflection report has been reduced from 55% to the current 30% with the marks reallocated to the case study. To assist in time management of the groups all lectures are scheduled for 9am (first class of the day) on the mornings otherwise free to work on the case.

12 Conclusions

The course has proved popular with the students who although task orientated develop their team building and project management skills with reflection. They learn about the European Case studies widening their understanding and also develop their subject specific knowledge with their own case study as a group. They are effectively undertaking a self managed tutorial on the issue while preparing the case study. It proves a reasonably effective and efficient method of developing these skills required of our graduates.

An educational evolution from agricultural science to rural management – a perspective from the UK

Tahir Rehman and Julian Park

School of Agriculture, Policy and Development, University of Reading, Earley Gate, Reading, UK

t.u.rehman@reading.ac.uk

Abstract

In most industrialised countries, the agricultural sector is neither a significant employer nor an important contributor to the national gross domestic product. Over the past decade or so, institutions of higher agricultural education in the UK have seen a steady decline in the number of students enrolling for the degree courses in agriculture and agriculturally related subjects. Different institutions have followed different strategies to deal with this change. In the University sector, some institutes no longer offer degree programmes in areas of their traditional strengths in agriculture and the related subjects. Apart from this, the other common response has been 'diversification' of the programmes on offer reflecting the perceived needs of the new entrants.

The programmes that have 'management' orientation or training elements in them that may help students in seeking jobs are popular amongst students, at least in the UK. This paper attempts to explore the reasons that may explain this phenomenon. Students seem to prefer programmes that 'prepare' them for management employment, require less stringent or even no science subject entry requirements, little or no laboratory work and definite prospects of acquiring skills that help find and progress in professional careers. Such preferences of the potential entrants to the higher agricultural education institutions have serious implications for the future of the institutions themselves, or at least the survival of agricultural departments within them. Drawing on the experience from the UK, issues related to the gradual shift of the curriculum design paradigm from a productionist emphasis to something completely different, possibly to rural and environmental management concerns are discussed. An interesting paradox exists in that the "farming industry" still requires a significant number of agricultural scientists to ensure the transition to more sustainable practices, although few students now enter University to study such courses. The discourse on rural and environmental management problems generally and their relationship with the rest of a society is itself far from clear. Nonetheless there are implications for the higher agricultural education sector possibly leading eventually to the consideration as to whether agricultural subjects qualify as 'disciplines' around which University degree programmes should be constructed.

1 Introduction

"Nothing endures but change"

- Heraclitus, Greek Philosopher

Change is all pervasive and higher agricultural education sector is no more immune from it than any other human activity. The enduring nature of change seems to be threatening the continued existence of what has hitherto been known as agricultural science and its teaching at institutions of higher learning, particularly universities, as never before. At a premier institution such as Reading renowned worldwide for its agricultural courses the drop in the number of undergraduates enrolling for the degree programme is alarming; there were over 80 students in agriculture in 1980 falling to the current intake of 9 only! *Prima facie* it appears to be an unmitigated disaster; but not quite when one explores what has happened and what might have been the underlying causes. An attempt is made in this paper to offer some conjectures in 'qualitative' terms and then some implications are drawn for wider

relevance. The primary purpose of this paper is to provoke discussion and debate amongst the participants in the 7th European Conference on Higher Agricultural Education.

2 Issues facing agricultural education – the situation in the UK

There are a number of issues that face higher education establishments generally and particularly in the UK. They include: the importance of the agricultural sector of the economy in most Northern European Countries is declining; falling numbers enrolling for agriculture and agriculturally related courses; agriculture is unpopular; diversification of degree programmes; 'overprovision' of agriculturally related programmes, possibly symptomatic of 'too many' institutions in the UK; and, 'booming economies' offering alternative and more financially rewarding careers. Let us consider these briefly to provide the backdrop to our discussion.

Decline in the economic importance of the agricultural sector
This is a contentious issue as when one talks of agriculture and agriculturally related education at institutions of higher learning then is agriculture the same as the rural economy. The rural sector which would include agriculture, forestry, equine industry, tourism, catering, hospitality and hotel establishments, food processing, sport and recreation, countryside residence and living (and office/workplaces) and related activities taken together would represent a formidable 'chunk' in most European economies. Insofar as the traditional agriculture is concerned, despite it still being the most dominant form of land use, its relative economic importance has definitely declined. The following short table shows the relative position of agriculture in the UK economy in terms two broad indicators.

Table 1: UK Agriculture's Economic Position

	Average 1992-94	2002	2003
Agriculture's contribution to total economy gross value added at current prices (£ million)	8 779	7 137	7 924
% of total Gross Value Added	1.5	0.8	0.8
Workforce in agriculture (thousand persons)	632	550	533
% of total workforce in employment	2.4	1.9	1.8

Source: http://www.defra.gov.uk

Numbers enrolling for agriculture and agriculturally related courses
In the UK there were around 400,000 students at 40 universities in 1963 when the famous Lord Robbins report established the principle of opening access to university education to anyone qualified to receive it – an idea which has become enshrined as a 'right' in the polity. Currently there are over 2 million students in 99 universities and this total in expected to rise by 60 percent thanks largely due to the policies of the government in power (Tony Halpin, "From the preserve of an elite to mind factories", *The Times*, 10 August 2004, p.7, col. 5). Agriculture and agriculturally related subjects have not benefited from this phenomenal growth in the number of university students and as argued by Park *et al*. (2002) the "pool" from which such students are drawn has shrunk considerably and has become virtually static since 1996. The static nature of the pool from which students for agricultural sciences can be drawn has significance for the future of teaching and learning.

Agriculture is unpopular
This particular point hardly needs further elaboration. Public perceptions of agriculture and farmers are anything but flattering for a host of reasons. Developed agriculture is regarded as a drain on public exchequer, produces un-safe, un-healthy and 'bad' quality food with disregard to animal welfare and is a source of environmental degradation and, so on – the catalogue of 'negatives' about agriculture is long. It is, therefore, hardly surprising that not many 18-year olds find agricultural science as an attractive choice for tertiary level of education.

Diversification of degree programmes 'overprovision' of agriculturally related programmes, possibly symptomatic of 'too many' institutions in the UK
The institutions of higher educational have responded to the fall in the demand for agriculturally related programmes in the classic manner: 'diversify', depending upon an institution's perception of the emerging changes in demand and what it is capable of offering. This strategy seems to have led to a proliferation of courses and the situation has now become that of 'overprovision'. It has been pointed that "within the UK, courses in agriculture have been traditionally taught at county colleges, national colleges or at universities. The former institutions have, in the past, concentrated mainly on practical training in the Further Education sector. The latter have been concerned almost exclusively with degree level education, the emphasis being on the scientific understanding of agricultural systems and their management. However, the former National colleges have oriented themselves toward Higher Education: Harper Adams is now a University College; Seale Hayne is a part of the University of Plymouth and the Royal Agricultural College is recognised for its undergraduate and postgraduate courses. In Scotland there is a more integrated system with staff being involved in teaching, research and extension under the Scottish Agricultural Colleges umbrella. In England several of the more prominent and larger county colleges have started offering degree courses in agriculture and related subjects, often in association with post-1992 universities. This has led to a greater number of institutions offering agriculturally related higher education and an increase in the diversity of courses being offered. The University and Colleges Admissions Service (UCAS) lists 1073 courses under the broad agricultural category (so-called D courses) (UCAS 2002). Analysis of this dataset shows that at present there are 14 institutions offering BSc Agriculture degrees and another 57 closely related courses" (Park *et al*., pp.328-329).

'Booming economies' offering alternative and more financially rewarding careers
The differential of earnings between the agricultural and countryside occupations and work in other sectors of the economy is well known and the differences for both the potential and realisable incomes are widening. For certain types of farming structures, particularly for family farms, succession is a real problem. Level of earning potential over a life-time is a real pressure for the shrinkage of demand for agricultural education.

3 The response of HE institutions

As touched upon earlier the response to the falling numbers in new entrants for agricultural courses in the university sector has been mainly in the form of 'diversification', after careful explorations of the 'market' and alternative opportunities and inevitably there was experimentation and some 'misadventures' did occur. The focus in curriculum design has shifted to 'providing for the customer' and this notion of a student or a learner as a customer and consumer is a vexing one for some university academics and needs to be addressed from the point of view of 'what is university education for?'

The staff and financial resource restraints in most institutions have meant resorting to 'mix-and-match' and 'latch-on' tactics, which quite often do not lead to the most appropriate and most satisfactory solution both for the institution concerned and the needs of the students. However, in Reading's case these stratagems seem to have worked and the original degree in agricultural science has now been 'transmuted', *mutatis mutandis*, into three separate ones, Agriculture, Agricultural Business Management and Rural Resource Management. For the academic session 2004/2005 the expected numbers for the first-year students are:

Agricultural Business Management	14
Agriculture	12
Rural Resource Management	7

This total of 33 is still a far-cry from the heady days of 1980s when there were 80 undergraduates enrolling for Agriculture, but possibly not bad given the shrunk and static pool from which they are

now drawn from. The strategy of diversification has enabled Reading to 'arrest' the decline in student numbers.

4 Moving into business management

Some would argue that there has been a 'sea change' in the attitude of prospective entrants to higher educational institutions. They perceive the university degree as an 'investment' directed towards finding employment, not primarily as learning and educational experience. A recent compilation of the information on the job destination of some 182,300 graduates by the Higher Education Statistics Agency would suggest that one in three have sought and found a job of a 'management' role (Paul Hill, "Medics and artists top job league", *The Times*, p.9). This may go some way in explaining the relative popularity of 'management' type of courses at all levels. Apart from job prospects, degrees in business management attract students who wish to avoid learning science (or do not have strong background in science at secondary school level) and are 'job savvy' on graduation.

It is interesting to note how the curricula of various degree programmes are changing to show cognizance of these factors at work, as shown below.

Curricula of the three degrees at Reading

Degree Programme	**Curricula**		
	Year 1	**Year 2**	**Year 3**
Agricultural Business Management	**Compulsory Modules** Introduction to Management Introduction to Marketing Introduction to Agricultural and Food Systems Economics I Market and Data analysis I British Agriculture in Practice Biology & Production of Crop Plants Introduction to Livestock Systems	**Compulsory Modules** Field Course Business Management Financial Management Farm Business Administration Environmental Regulations and the Farm Business Visits & Reports IT & E-business in Agriculture	**Compulsory Modules** Human Resource Management Managerial Economics Principles Business Planning Methods Business control Dissertation Business Case Studies
	Optional Modules Countryside & the Environment The UK Food Chain Applied Economics and Business Workshop Institution-Wide Language Programme	**Optional Modules** Taxation and Valuations Countryside Management Forestry & Woodlands Animal Health & Welfare Marketing Management Environmental Economics I Arable Crop	**Optional Modules** Rural Policy & countryside Planning Business Entrepreneurship Systems Modelling Horses & Other companion Animals Farm animal Welfare Agricultural Systems in the Tropics Cereals Management & Marketing Managing Recreation

		Protection Organic Farming International Economics I Agricultural Machinery & Buildings Agricultural & Rural Policy Research Methods & Data Analysis (for Social Scientists) Animal Production Grassland Management Rural Sociology Institution-Wide Language Programme	on the Rural Estate Marketing & Business Strategy Agriculture, Environment & Sustainability Institute-Wide Language Programme
Agriculture	**Compulsory Modules** Introduction to: Management Agricultural and Food Systems Agriculture in Practice Crop Production Livestock Production	**Compulsory Modules** Machinery & Buildings Farm Practicals, Projects & Reports Animal Production Crop Production Statistics Field Course Business Management Financial Management	**Compulsory Modules** Human Resource Management Practical Crop Production (Wheat Growing Competition) Dissertation
	Optional Modules Soil Use & Management Environmental Science The UK Food Chain Countryside & the Environment Genetics & Molecular Biology Digestion & Nutrition Marketing	**Optional Modules** Organic Farming Agricultural & Rural Policy Grassland Management Animal Health & Welfare Animal Breeding Taxation and Valuations	**Optional Modules** Animal Growth & Meat Production Animal Welfare Business Management Case Studies Crop Growth Equine Management Food & Agriculture Markets Milk Production Soil Fertility Wildlife
Rural Resource Management	**Compulsory Modules** Countryside & the Environment Business Management & Marketing	**Compulsory Modules** Countryside Management Field Course Applied Rural Resource	**Compulsory Modules** Research Planning Field Course Rural & Business management Rural Policy &

	Rural Resource Management in Practice Introductory Economics Market and Data analysis	Management Rural Business Management Research Methods & Data Analysis Rural Sociology	Countryside Planning Individual Project
	Optional Modules Introduction to Agricultural and Food Systems Ecology & the Landscape Agri-Business IT & Communications Introduction to Biology Introduction to Crop Production Biodiversity Economics Institution-Wide Language Programme	**Optional Modules** Sustainable Land Management Environmental Assessment Public Sector Management for Rural Resources Forestry & Woodlands Agricultural & Rural Policy Consumer Behaviour Organic Farming Institution-Wide Language Programme	**Optional Modules** Managing Recreation on the Rural Estate Business Management Case Studies Environmental Management Business Entrepreneurship Forestry Equine Studies Estate Finance & Business Management Environmental Management Wildlife in the Farming Environment Agricultural Law & Valuation Conservation & Biodiversity

There are some "conjectures" that suggest themselves naturally to explain the popularity of the 'management' type of degree programmes and within those programmes that type of modules. There are possibly two main explanatory factors: "crisis(es)" in number 16-year olds taking science A-levels; corresponding increase in numbers taking non-science A-levels, with parallel increase in variety of non-science subjects and "relevant" and "soft" subjects and, level of earnings in non-science careers and rates of unemployment.

5 Issues for discussion

The brief outline of the experience at Reading has been narrated to instigate discussion and debate on some of the issues that it seems to raise. They include:

- *Is agricultural science dying?*
- *Was there such a discipline called "agricultural science" in the first place?*
- *The need for a shift in the "mindset" of the curriculum designer and the paradigm of design from "productionist" to something completely different, but what?*
- *How much 'agricultural science' and production technology should 'managers' learn?*
- *The "shopping basket" approach to acquiring degree qualifications – choice modules suitable to one's interests, intellectual abilities and perceived career development needs!*
- *What is the purpose of obtaining a degree qualification? Students' expectations!*
- *What happened to the university student as "learner"?*

- *Does someone seeking success in a "managerial" career in agricultural and rural sector jobs need a degree level qualification?*
- *Is a degree programme the most appropriate preparation for a 'management' career? Or, is the eventual career more a function of personal traits, however acquired?*

Agricultural science and discipline
What constitutes agricultural science or discipline has exercised many a mind and there are those who would not regard agriculture as a science, whilst others may take it to be the 'mother of all sciences'. This is neatly illustrated by Mayer and Mayer (1974, p.83) who assert that "few scientists think of agriculture as the chief or the model science. Many, indeed, do not consider it a science at all. Yet it was the first science – the mother of sciences: it remains the science which makes human life possible, and it may well be that, before the century is over, the success or failure of science as a whole will be judged by the success or failure of agriculture". Well, this was back in 1974. How valid is this point of view in the 21st Century?

Technological and 'productionist' paradigm for the design of curricula for agriculturally related courses for the aspiring 'managers'
There is some serious thinking required here. Are agricultural and rural managers akin to *pharmacists* who cannot run a pharmacy without a course and training in that science?

Shopping basket approach to self-select degree programmes drawn from the modules on offer
This could be the shape of the things to come, but should it be so?

Student expectations and what happened to the learner?
There is a considerable scope for debate and difference of opinions on these issues. Essentially there are two areas of concern: the general abilities of students currently entering the university system and the growth of the 'consumer culture' with all that entails. In a recent survey of academics the general dismay about the basic abilities of students was observed to be predominant and the belief that students are not as good as they used to be 10 years ago is a firm one (Alexandra Blair, Sophie Coulombeau and Oliver Brown, "University students not as clever as they used to be." *The Times*, 10th August 2004, p.7). According to this survey there is a serious concern amongst academics about the "consumer culture" where students see lecturers as "suppliers" of the commodity with which the student can get a better job. Recently, a more realistic view and a student-sympathetic view has been expressed by Skok (2003, p.10) who argues that "students often enter higher education without a clear understanding of the demands of academic life, where study skills, motivation and time management can be just as important as academic skills". Skok treats a student's sojourn at a university as a 'journey of learning' in which it is the traveller who makes what he will of the experience, but regards it as the responsibility and obligation of the institution and lecturers to make it absolutely clear to the student what is expected of him/her and how (s)he will be judged. He believes students, because of their own stake in the process, respond to clearly laid out criteria. In this regard he applauds the *benchmarking standards* of assessment criteria established by the Quality Assurance Agency's Benchmarking Standards (QAA, 2000) as laid out below:

To enable a student to take personal responsibility for the learning process Skok uses the below scheme and develops a rather humorous analogy of a student being a *traveller* or a *tourist*, the difference between the two being that a *traveller* "wishes to acquire more knowledge of a country – to learn its culture, language, history and current position in the world. The traveller is an experiential learner" (Skok, 2003). The *tourist* is "someone on a package holiday. He or she likes to be told what to do, rather than discover things for him or her self. The tourist is predominantly looking for a pleasurable experience" (Skok, 2003).The analogy moves to lower levels of performance, a *hitch-hiker* ("…someone who adopts a rather ad-hoc approach to their learning and may occasionally be on the journey but often is not.") and a *couch potato* (" … who never really starts the journey and consequently fails the course..").The top category is the first class students is the *explorer*, "who is not stratified with the current situation as given but who seeks new territories and experiences."

Table 3: Description of marking standards distributed to students

Class	Grade	%	Description
1st	A	70+	Work of distinguished quality which is based on very extensive reading and demonstrates and authoritative grasp of concepts, methodology and content. Clear evidence of originality of thought and ability to synthesise complex material, think analytically and/or critically.
2.1	B	60-69	Work which demonstrates a sound and above average level of understanding of concepts, methodology and content. There is clear evidence of critical judgement in selecting, ordering and analysing content.
2.2	C	50-59	Work derived from a good basis of reading and which demonstrates a grasp of relevant materials and key concepts as well as the ability to structure arguments. No serious omissions or irrelevancies.
3	D	40-49	Limited understanding of key concepts and limitation the selection of relevant material. Work may be flawed by some omissions or irrelevant material.
F	F5	35-49	Marginal fail.
F	F4	1-34	Clear fail.

Source: Skok (2003, p.11)

Skok (2003) throws the gauntlet to both the learner and the educator to make use of this simple analogy to the mutual benefit of the student and the educator. The correspondence between the various grades of degree classification and the experience of learning is shown below.

Descriptor		Grade	Degree Classification
Explorer		A	1st
Traveller		B	2.1
Tourist		C	2.2
Hitch Hiker		D	3rd
Couch Potato		E	Fail

Does someone seeking success in a "managerial" career in agricultural and rural sector jobs need a degree level qualification?
This is an old chestnut and usually various tycoons and entrepreneurs have offered enunciations and pronouncements on this. The latest one being Sir Alan Sugar (of the Amstrad PC fame) who asserts that any degree is useless for success in management, education in the 'university of life' is all that one needs! This view has to be contrasted with the one expressed by those who are desperate to get into Harvard Business School and declare that "the Harvard degree is worth a lot of money to me back in Chicago".

Is a degree programme the most appropriate preparation for a 'management' career? Or, is the eventual career more a function of personal traits, however acquired?
This is probably a worthwhile territory to peruse arguments for and against the role of formal education and training in combination with personal traits play in determining the success or failure of any individual. Only this year Brown and Hesketh (2004) have published a very detailed review of *recruiters* as to what they are looking for in prospective employees and how they *classify* them from the point of view of employability. It would perhaps be worth reviewing this typification to ascertain if the management education is producing the *goods for the market*.

The Star

"THE perfect package for the managing director. As well as top grades at GCSE and A-Level, the star will typically have at least an upper second-class degree from a leading university. Allied to academic excellence, this candidate will also offer impressive employment experience and international travel. To complete their appeal, the star also shows in an interview that they are sensitive but tough, enthusiastic and driven, but also able to deal with failure."

The Safe Bet

"Has a good degree but is not the brightest candidate. Gets on well with people but is not brimming with charisma. Will do a steady job, put in the hours, but will never pull up enough trees to become a star name. Bosses often go for this option if they are cautious and do not want to gamble on someone they consider a maverick who could turn out to be brilliant or equally hopeless. The safe bet is the personification of steadiness and reliability - an average six out of 10 performer."

The Freezer

"SHY and lacking in the confidence needed to do the job. The office wallflower who people find hard to get to know. Their body language is poor and their social skills are not up to scratch if they want to become top performers. But they sometimes get the nod for a job if employers feel they have potential and may come out of their shell and grow into a role. Extreme freezers can become virtual recluses in the office, often choosing to sit alone and exchanging only a handful of sentences each day with colleagues ."

The Iffy

"At first the Iffy appears to have lots of qualities. Clever and personable, this candidate initially impresses. But when the interviewer examines more closely, it emerges that beneath the bluster there is little substance. They tend to waffle and 'talk a good game'. They show flashes of what the employer wants but after scratching the surface the boss discovers there is minimal talent."

The Geek

"OFTEN displaying a high level of academic and technical ability, the geek certainly has the skills to do the job. But the downside is that they are often clueless about some general aspects of life or other sections of the business they work in. They are obsessed with their particular field. They can get the job done but they do not mix well with colleagues or work well in a team. Often a loner, they are unlikely to be seen chatting with others over coffee during a break."

The Nerd

"Similar to the geek. This candidate may have gone to Oxford or Cambridge and graduated with a first-class honour degree. But the difference is that while the geek will crack on with the job, the nerd gets bogged down in other obsessive, distracting pursuits, including playing computer games, writing programs and e-mailing other nerds."

The Razor

"BRASH, bold and confident – with good qualifications to match. But the Razor is too sharp. Tries too hard to impress, leaving a sour taste. By the end of the interview the employer thinks this candidate is arrogant, abrupt, patronising, opinionated and over-bearing. Because of the outward ultra-confidence, the Razor often does not realise he as made a bad impression."

The Non-starter

"Lacks the required academic work or personal skills to do the job. Never a serious contender and should not have been given an interview. At interview the non-starter is likely to stare blankly. Even when this candidate does reply the answers make little sense. By the end of their grilling the red-faced non-starter is relieved to get out."

Conclusions

Help from the audience is solicited in forming some conclusions to this presentation, or else

"The Times, They are
A-Changin"
- Bob Dylan, 1963.

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Rural leadership education research: is ambiguity OK when shaping the future graduate profile?

Richard Soffe and Mark Stone

University of Plymouth, Plymouth, UK

rsoffe@plymouth.ac.uk

Abstract

Writers on leadership tell us that it is a difficult subject to define. There are as many definitions of leadership as people who have tried to define it (Stodgill 1974). Is it just an element of business management that should be embedded similar to other areas of management education and development? Or is it a specific field of human endeavour and behaviour that deserves specific educational and developmental attention?

Leadership is important if judged by the volume of business clients keen to register on Continuing Professional Development (CPD) courses involving leadership and the number of books available on the subject, over 35,000 in 2004 (Amazon.com July 2004).

However, should we be exposing undergraduates to a subject where the lack of an agreed paradigm(s) by academics & researchers may confuse students?

If the answer is yes, then how should we be teaching leadership and how will students and managers learn and develop within the wider curriculum and extended leadership development opportunities?

This paper seeks to discuss and debate the emergence of a coherent pedagogy to inform the teaching of leadership to students and professionals.

As part of this process the authors questioned undergraduate business management students and rural business professionals on their experiences of leadership in an attempt to inform the practice of leadership education and development.

In an attempt to discover if those studying leadership are developing beyond a straight forward academic understanding or training / skill based appreciation of the subject, the authors have investigated their emerging language and vocabulary of leadership. This has been achieved through the use of a content analysis research methodology adapted from a model used at the Colorado State University in the United States (Anon 2000-2004). From this analysis, the authors have created an emergent mental model of how leadership education and development fits with the concept of graduate level performance or 'graduateness'.

The paper will provide an insight relevant to the rural economy by showcasing examples of emerging language and vocabulary of leadership from students undertaking land-based industry programmes of study or CPD.

Finally, this paper will put forward some further clarification of known leadership education ambiguities for discussion and debate and outline the next stages of development for this evolving area of research.

1 Facilitating students to find their leadership voice

In helping students to find their leadership voice, the authors do not restrict the curricula to a simply taught and examined sub-set of material they are comfortable with. If we are to challenge students, we must share with the students the ideas and concepts on leadership that have resonated with and challenged us. Some of these 'headlines' are outlined below.

In defining leadership, Stodgill (1974) points out that there are almost as many definitions of leadership as there are people who have tried to define it. Leadership publications and articles have increased greatly over the past decade but agreement on a definition appears distant. "This concept (leadership) must be spacious. To allow for the values of different cultures and organisations" (Heifetz 1994). Heifetz (1994) hypothesised that … 'Leadership is all about mobilizing adaptive activity'; he maintains we are genetically 'hard wired' to reach for the tool box and find something that we have tried before and apply the same again – a technical fix. So what is an adaptive challenge?

An adaptive challenge is a situation where a technical fix (mechanistic approach) is inappropriate or not sufficient to meet the new challenge. If a fire breaks out we call the fire service who use tried and tested methods to extinguish the flames. Even though it is an emergency, the professionals treat it as a technical problem; the leaders understand that this is a technical fix. If they suddenly discover that the building contains chemicals that the fire service had not come across before then they enter the new leadership challenge an adaptive challenge; which calls for new adaptive leadership where mindsets may have to change.

We are hard wired to bring the disequilibrium back to zero. If the disequilibrium is not great we may tolerate it. If the disequilibrium is too great it may have serious consequences on our selves or our team. If we recognise the problem then we try to use tried and tested methods of addressing the problem; a technical fix. If we continue to experience disequilibrium because we do not know the nature of the problem or it does not respond to a technical fix then we have an adaptive challenge on our hands. An adaptive challenge calls for novel thinking and action to address the problem. So it is the situation which defines our action.

'Golden rules' that follow from Heifetz & Linsky's work (2002):

1. Leadership does NOT necessarily come from the authority figure
2. The people involved in the adaptive challenge often need to 'take a loss' from the situation if they are to proceed and come to grips with the new reality. This may be a new work practise, a new way of interacting with colleagues, etc.
3. Give the problem back to the people. Whilst this may not be popular – the best people to solve a problem are often the very people it is affecting

Leadership is a much more widely distributed and frequented activity than we are often given to believe, Kegan & Lahey (2001). Senge (1990) suggests we need to be a 'learning ' organisation'. We need to look at the holistic organisation and help the people in the whole organisation to learn to organise themselves. Giles and Stansfield (1990) suggested that rural managers often felt 'intellectually and professionally lonely', due to the remote nature of their work.

Pascale et al (2000) suggests we should live and learn to lead on the 'edge of chaos' if we are to progress - this has echoes of disequilibrium and adaptive challenges. Chaos is not mean in its common usage but similar to entropy the way the natural world is moving over time. In the natural world and in business, he suggests, 'equilibrium is death'.

Kegan & Lahey (2001) have produced much evidence to say that most of the people we work with (and possibly ourselves) state what they really want and then if you listen carefully they will tell you

what they will do to keep from getting it. He suggests that we are talking ourselves into not changing. We need to look at our deepest fears. We talk ourselves into not doing what we want to.

Drath (2001) pulls together many of the elements above to suggest that leadership are about:

- setting direction
- creating commitment
- facing adaptive challenges (rather than technical fixes)

He argues that while traditional leadership was about personal dominance now this has changed to interpersonal influence where the leaders and followers have influence but the leaders exert more influence than the followers.

Heifetz and Linsky (2002) suggest that leadership happens rarely. Most management is concerned with the technical fix, hard wired to use techniques they've used before, applying the past to the future rather that exerting "real" leadership when people face an adaptive challenge. Perhaps the adaptive challenge for businesses and organisations is to move people from waiting for a 'messiah' - a Churchill or Thatcher (personally dominant) leader. Drath (2001) asks us… Has leadership reached the Interpersonal Influence stage or moved beyond it? …where 'leaders involve followers actively in the process of negotiating influence'. The authority figure has influence (rather than control) and may well still have the most influence over the situation. The key point is the involvement of staff in the leadership debate.

Perhaps future leadership will come from a 'relational dialogue' where all the stakeholders are consulted and traditional voices have a part to play but have to take a 'loss' from their current position. Drath (2001) suggests success in the future will incorporate this third principle, relational dialogue, where there is more collective decision making. This may mean that the real "leader" will be people who have in fact no formal authority but will be able to find and use a language / vocabulary of leadership that is both situation apt and personally convincing to the leader and the led.

2 How 'our' leadership teaching is shaped

Our undergraduate module allows the student to explore the role of leadership within organisations and workplaces. Students deal with both the practical and theoretical aspects of leadership and how the concept has and is changing over time. The module also includes an intensive UK based expedition field trip to enable students to further explore leadership.

<table>
<tr><td>Mini Pathway
60 Credits</td><td>Stage 1 module
20 Credits</td><td>Stage 2 module
20 Credits</td><td>Stage 3 module
20 Credits</td></tr>
<tr><td rowspan="2">Enterprise and Leadership
Modules and overall mini pathway objective</td><td>Enterprise</td><td>e-Business</td><td>Leadership</td></tr>
<tr><td colspan="3">Identify business opportunities (including those based on digital technologies) and lead their development into commercial practice</td></tr>
</table>

Figure 1: How the leadership module sits within a three year, 360 credit undergraduate degree

Key Module Aim and Objectives:
To provide an introduction to leadership techniques and to develop the wider understanding of the key elements of leadership planning:

- *To explain the difference between management and leadership*
- *Define the basic concepts relating to leadership*
- *To enable students to consider the role of leadership within organisations*

The 12 week course starts with a challenge by the lecturers as to 'where to begin'; 'challenging the notion of the authority'; e.g. the student idea that the person at the front is the only source of leadership. The lecture / workshop sessions consist of two themes, current thinking and participative challenges. Assessment is by a group project and an individual report.

The authors work in a team teaching approach. A range of guest speakers compliment the sessions; ranging from authority figures to inspirational speakers including mountain climbers. A range of activities and 'psychometric' tests are also used to encourage reflection and personal self awareness and to assist with providing formative feedback.

The module is the pre-requisite to a module on expedition management where adventurous activities are combined with leadership coaching and analysis. Students spend time in a remote location under physical and mental discomfort to experience their performance under pressure.

3 'Graduateness'

The curriculum design for the leadership module had clear links to a range of University policies and initiatives; particularly focused on achieving defined and enhanced levels of graduate capability and performance in the workplace. Key design influences included:

- The University of Plymouth Student Centred Learning Initiative (SCL)
- The embedding of Graduate Attributes and Skills (GAS)

The leadership module was created to give students 'level' three or final year undergraduate learning opportunities and experiences. The module incorporated both academic challenges and skills development elements. In terms of mapping both the range and level of attributes and skills that a graduate should be able to demonstrate, the University of Plymouth used (at the time of creating the module) a modified model of GAS derived from the South East England Consortium (SEEC) level descriptors.

The GAS outlined a planned development trajectory for student skills and attributes towards graduation. Outlined below are two of the level three (final year) GAS that are embedded within the leadership module.

- ***Self-Appraisal / Reflecting on Practice***
  Is confident in application of own criteria of judgement and in challenge of received opinion in action and can reflect on action
- ***Planning & Mgmt. of Learning***
  With minimum guidance can manage own learning using full range of resources for discipline; can seek and make use of feedback

In response to the University SCL initiative, the Seale-Hayne campus business management team (including the authors) worked towards ways of more explicitly describing and proactively explaining the links between the planned curriculum, expected student behaviour and the learning and development aimed for.

One key way in which this was done was to firstly formalise as a group a pedagogic model across all business management subjects. This included outlining how the teaching and planned staff student interaction would change over the three development levels of an undergraduate course.

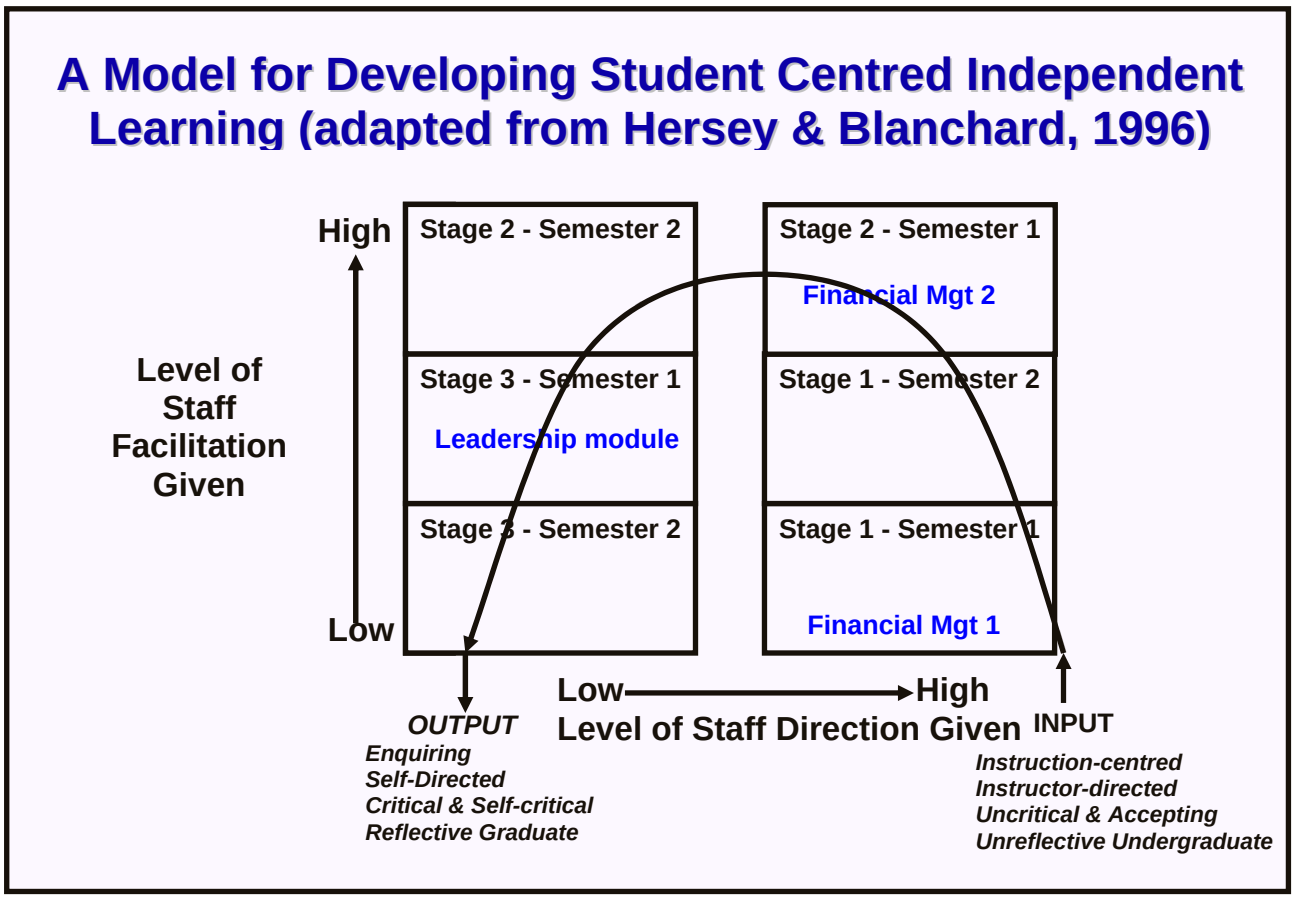

Figure 2: Change in module delivery style across six terms mapped onto a model by Heresy and Blanchard (1996).

The leadership module sits in term one of the final year. The level of staff direction and facilitation are both falling. Students are explicitly expected to take increased charge of their own learning. It is therefore fitting that a module that offers a less agreed / coherent body of knowledge and is more open to student interpretation and personalisation appears at this point in their programmes of study.

However, the structuring offered to students (and staff) in terms of an explicit skills and attributes agenda coupled with an explicit curriculum design offers students a degree of certainty that enables a more exploratory approach to be taken to the study of leadership.

The authors flag to students how the leadership module fits into both the management curriculum and is part of their progression towards being able to work at a graduate level.

4 The emerging student vocabulary / language of leadership

The authors, in an attempt to further inform the curriculum and to better judge the level of leadership development and academic progression of their students initiated the programme of research described below.

The authors aimed to do this by exploring reflective writing of students related to leadership. Specifically the students were asked to respond to 14 open ended questions within a longer questionnaire used to judge student attitudes to leadership. The questions were targeted at generating

comments covering a range of situations from their previous experiences of leadership (both leading and being led) through to projections as to their views of their future leadership plans / expectations.

Sample questions:
[Q] *What is the most challenging leadership situation (your leadership of others) that you have been involved with?*
[Q] *How did you come to be the team or group leader (in the situation described in above)?*
[Q] *How did/do you rate your performance as the team or group leader*?

The research methodology chosen to further this work was Content Analysis.

5 Content Analysis as defined and used within this study

The following methodological approach is an adaptation of a model used at Colorado State University (Anon 1997-2004). Content Analysis; '*a research tool used to determine the presence of certain words or concepts within texts or sets of texts'. 'Researchers quantify and analyze the presence, meanings and relationships of such words and concepts, then make inferences about the messages within the texts, the writer(s), the audience, and even the culture and time of which these are a part.'*

While content analysis can be applied to examine any piece of writing or occurrence of recorded communication within a wide variety of 'fields', this study will be restricted to issues relevant to ethnography and cultural studies, gender and age issues, sociology and political science, psychology, cognitive science and socio- and psycholinguistics. The initial Leadership Education research objectives / questions that prompted this study and the methodological choices choice within it are as follows; to gain an understanding of how:

- students engage with the subject*
- those studying leadership find their leadership voice*
- individuals and groups develop a language / vocabulary of leadership*
- the study of leadership links to the development of 'graduate-ness'*
- leadership skills relate to graduate career development and employability
- follower-ship and leadership development at all levels of organisations (follower-ship)

*The key priorities for this stage of the study are starred **

Content Analysis - methodological approach within this study

Conceptual analysis has been used to establish the existence and to a lesser extent the frequency of concepts, represented by phrases, sentences and paragraphs within the analysed text. The approach taken within this study also includes an element of Thematic Analysis as the focus has been to look at the occurrence of selected concepts/categories within the text on an implicit as well as explicit basis. An attempt has been made to limit the subjectivity of judgments involved in coding on an implicit basis and hence improve reliability and validity. No specialised coding dictionary was created, but simple contextual translation rules were applied; specifically during the second round of coding based on the 'six leadership developmental steps' (*as described on page 12*) the key question was does this block of text provide 'evidence' of that particular 'level of leadership development / progression'?

On the basis of the macro level leadership education research questions identified above an initial sample set of seventy two final year undergraduates studying leadership was chosen. Data was gathered in the form of an online questionnaire using Perseus 2 software. The response rate was 42%. The questionnaire was formulated in two parts. Part one required responses to questions ranked using a Likert scale. In part two the students were asked to respond to 14 open ended questions targeted at generating comments covering a range of situations from their previous experiences of leadership (both leading and being led) through to projections of their future leadership plans and expectations.

The resulting responses were first entered into an Access database along with other educational research data related to this and other cohorts of students (derived from other modules). From here the data set was exported into (N6) content analysis software. From here, coding choices were made following the **eight conceptual analysis stages** indicated by Carley (1990):

1. decide the level of analysis - *work with groups of words or phrases*
2. decide how many concepts to code for - *using pre-defined and 'developed' concepts/categories to focus on patterns that are indicative of the research question/s*
   - Round 1 coding grouped all the answers to each question within a group (a node within N6 software)
   - Round 2 coding based on Drath's Leadership Themes:
     - personal dominance
     - interpersonal influence
     - relational dialogue
   - Round 3 a '*developed*' set of concepts/categories emerging from the text: evidence that students are…
     1. *Able to identify situations / circumstances where a leadership need exists*
     2. *Able to identify / diagnose leadership issues or problems*
     3. *Able to tackle or address leadership issues or problems*
     4. *Able to take responsibility / responsible action for the leadership of others*
     5. *Able to plan and enact own leadership development including recognising opportunities*
     6. *Able to demonstrate / exemplify leadership skills in action*
3. decide whether to code for existence or frequency of a concept/category
   - some initial basic coding ['*Confidence*' and '*Motivation*']
   - v. limited perspective; not considered significant / insightful
   - focus on blocks text relating to '*developed*' concepts/categories
4. distinguish among concepts and level of generalisation
   - level of generalisation was initially high
   - inclusive approach - all potential positive evidence included
   - a second iteration culled data offering no clear evidence of student reflection related to the particular concept/category
   - a final iteration culled all but the strongest evidence
5. develop rules for coding the text
   - determine the equivalence of potentially radically different and or overlapping data - the '*level of implication'* allowed
   - create translation rules to facilitate streamlined, organised, consistent and coherent coding
   - agreed code definitions enhance the validity of subsequent interpretations - by cross checking the results of researchers/coders *e.g. determining the level of leadership maturity and the corresponding academic level*
6. decide what to do with irrelevant information
   - no material remaining un-coded at any round of coding has been eliminated as irrelevant
   - text has only been treated as irrelevant to the particular round or stage of coding being undertaken
   - data remains within the N6 software; available for subsequent study re-examination, re-assessment under the existing or revised coding scheme
7. code the text - *using N6 content analysis software*
8. analyse the results of the conceptual analysis - *to suggest trends and questions for further study using relational content analysis*

Question	Node 1	Node 2	Node 3	Node 4	Node 5	Node 6
21	▪	▪			▪	
22	▪	▪			▪	
23	▪	▪	▪		▪	
24	▪	▪	▪		▪	
25	▪	▪		▪	▪	▪
26				▪	▪	
27	▪	▪	▪	▪	▪	▪
28	▪	▪	▪	▪	▪	▪
29					▪	
30			▪		▪	
31					▪	▪
32			▪		▪	
33	▪	▪	▪	▪	▪	▪
34	▪	▪	▪	▪	▪	

Figure 3: coding matrix; mapping student reflections against concepts/categories nodes

Use of Framework Method within Content Analysis
When exploring the text 'Framework' method was used to help the authors evolve the above concepts/categories / nodes. Originally developed by SCPR (Social and Community Planning Research) by Ritchie and Spencer (1994); this qualitative method of analysis changes in relation to the data to which it is applied. Rather than being a highly specific technique, Framework is a generic method, providing a versatile means for qualitative analysis. It provides a procedural structure to which the researcher can apply their own data.

Framework analysis method was used to evolve the concepts/categories. Framework guided the deeper exploration and investigation of leadership development and education - *the researchers could develop 'hunches' about how aspects of the data related to the research questions*. Framework allowed the mass of data and hunches to be organised in a structured way:

- Familiarisation
- Identifying a thematic framework
- Indexing
- Charting
- Mapping and interpretation

Relational Analysis within Content Analysis
Relational analysis was used to further examine the relationships among the concepts/categories identified within conceptual analysis of the text outlined above:

- further examine the relationships among the concepts/categories identified within conceptual analysis
- go beyond the presence of data aligned to concepts/categories by exploring the relationships between the concepts identified
- look for semantic, or meaningful, relationships among the individual concepts/categories

Mental Models derived from Content Analysis
'Mental models are groups or networks of interrelated concepts that are thought to reflect conscious or subconscious perceptions of reality. According to cognitive scientists, internal mental structures are created as people draw inferences and gather information about the world.' (Anon 1997-2004).

The approach will, at the next stage of the study follow the five key steps below:

1. identifying concepts
2. defining relationship types
3. coding the text on the basis of 1 and 2
4. coding the statements
5. graphically displaying and numerically analyzing the resulting maps

The two mental models that this study aims to build the foundations for are:

- The link between and contribution of leadership education to the achievement of 'graduateness'
- The relationship between leadership education and the progression of undergraduate and postgraduate students through the 'levels' of their education

Relational Analysis methodological approach within this study
The steps outlined below are those most appropriate to this study from the many possible approaches available to the content analyst. The researchers are at the start of testing this approach; with the aim of subsequent application with different populations and longitudinal studies. Relational analysis helps to maintain… *a high degree of statistical rigor without losing the richness of detail apparent in even more qualitative methods (Anon 1997-2004)*.

Reliability & Validity of the use of content analysis within this study
While every attempt has been made to ensure a rigorous methodological approach, the reliability of the content analysis approach described above has not been tested for its stability and reproducibility, through testing whether the researchers or subsequent coders consistently re-code the same or similar data in the same way over a period of time. This study does not claim accuracy due to the extent to which the classification of a text corresponds to a standard or statistical norm. The authors also recognise that reliability (especially of coding) is further complicated by the inescapable human nature of researchers (Gottschalk 1995 in Anon 1997-2004).

Advantages of Content Analysis for this study

- looks directly at reflective commentary on personal views and experiences of leadership and hence gets at the central aspect of research questions driving this study
- allows for both quantitative and qualitative analysis
- provides the opportunity to build valuable historical/cultural insights over time through analysis of texts by supporting later or additional comparative or longitudinal studies
- allows a closeness to text which can the researchers to alternate between specific categories and relationships and also statistically analyse the coded form of the text if required
- can be used to interpret texts for purposes of informing and developing the approaches to leadership education
- is an unobtrusive means of analyzing the development and deployment of leadership capabilities and skills of leadership
- provides insight into complex models of human thought and language use

Analysis of student reflective writing on leadership
We can link the student vocabulary with the theory from Drath (2001) regarding the development of leadership. Drath regards leadership as a deep blue ocean which is slowing giving up its information as we plumb the depths. He suggests three broad areas:

- personal dominance
- interpersonal influence
- relational dialogue

Drath's Leadership Themes	Sample Student Vocabulary
Personal Dominance • Leadership is something a person possesses • Leadership is an expression of this personally possessed quality or characteristic • Leaders lead because followers are convinced of the truth of their leadership	*Don't give in to everyone, and let people walk all over me. Be strong and more assertive.* *…(bosses) they discipline you when required but not in a humiliating manner* *Understand how to discipline people with out demoralising them - how to motivate others and myself more effectively.* *Muhammad Ali…. his ability to communicate, to react to confrontation and stand up for what he believed in*
Interpersonal Influence • understanding what happens when a group of people agree, disagree, ally and contend, concur &argue, plan &negotiate until someone emerges as the most influential person and thus claims the role of leader • leadership is a role occupied by the most influential person • people possess or can acquire certain qualities and characteristics that enable them to be effective in such a role • leadership involves followers actively in the process of negotiating influence • leaders lead by influencing followers more than followers influence the leader	*Be less bossy and listen to others also to learn to delegate* *… give them advice without ordering them around* *I took charge, because nobody else appeared to have the same dedication and commitment to the project as I did.* *My section manager at work has given me much encouragement and praise,* *and given me the confidence and pride to learn new skills and develop new knowledge*
Relational Dialogue • Leadership is the property of a social system • Individual people do not possess leadership; leadership happens when people participate in collaborative forms of thought and action.	*I became the team / group leader… by default, no leader was appointed at the start…*

Figure 4: Mapping Drath's (2001) Leadership Themes to student reflective statements

In a number of companies and public sector organisations leadership is moving from the traditional (personal dominance) to interpersonal influence and in a few to relational dialogue.

These initial results offer some cause for optimism in that undergraduates are able to differentiate and see the breath of appropriate leadership styles at all levels, not just at the head of an organisation.

Leadership development and academic progression
Outlined below are sampled student quotes from the Content Analysis described above, mapped against the six developmental leadership steps (from page 8):

[01] Able to identify situations / circumstances where a leadership need exists

When playing a rugby match, our captain turned up to watch and didn't play. We won the game and our captain went straight home without even saying well done or anything and it

made us feel de-motivated. A good leader would have congratulated us and made us feel like we had achieved something.

[02] Able to identify / diagnose leadership issues or problems
… I feel we shape our own destiny and that rarely do opportunities simple fall into your lap. Also it seems not many people want to be leaders and therefore a group can fall into a situation of bumbling along blind. The majority of work requires working in groups and therefore getting the best out of the team will require knowledge of leadership from me to lead the team or understanding from me as to what the leader is requiring from me and how best to help them.

[03] Able to tackle or address leadership issues or problems
Recognise that nobody is ever perfect and that continual improvement is needed. Understand how to encourage people through praise and not feel that I am being patronising. Understand how to discipline people with out demoralising them - how to motivate others and myself more effectively.

[04] Able to take responsibility / responsible action for the leadership of others
I took charge, because nobody else appeared to have the same dedication and commitment to the project as I did. I felt that it was necessary for someone to take charge, and because I have higher expectations than the others, I felt that it had to be me, in order to gain a good grade.

… the most challenging leadership situation I have been involved with… was during a hike upon Dartmoor, when the team got seriously lost, the hike was supposed to be achieved in one hour but instead took almost nine. There was a point when the group had become tired and scared, I successfully managed to calm a situation and provide motivation to continue.… I became the team / group leader… by default, no leader was appointed at the start, I didn't like the situation that had presented itself and took charge.

[05] Able to plan and enact own leadership development including recognising opportunities
I think my leadership performance will be quite important to me as I want a career in organising events and therefore will need to organise and lead people into completing tasks (including myself).

[06] Able to demonstrate / exemplify leadership skills in action
…the realisation of realistic targets. The motivation levels of the group members. The effective use of praise and discipline of members. How well the group kept on the right track. The amount of ideas put forward from group members and if they were able to be sensible debated without causing feelings to be hurt.

6 Discussion – mental model evolution

Further analysis of the data offers an insight into an emerging student vocabulary / language of leadership. Taking a qualitative overview of the student reflective responses shows that the answers fall all into three further developmental stages of learning:

1. vocabulary / language of **Experience**
2. vocabulary / language of **Study**
3. vocabulary / language of **Practice**

The majority of students were able to offer clear and focused reflections on their experience of leadership (both leading and being led) in a wide range of settings / contexts including work, university, sport, family and social situations. Slightly fewer student responses were offered for how

they felt their own practice of leadership had, was and would develop. The evidence provided was less focused and language used less detailed.

Of potentially more concern to the authors was the widespread lack of vocabulary / language used that could be attributed / identified as coming from their studies of leadership. Few theories, strategies or approaches were quoted or linked to their reflections.

What could be reasons for this?

1. Are the students not sufficiently reading around the subject and therefore not understanding the value of or appropriate application of leadership?
2. Did the theory introduced by the authors not speak to the students?
3. Are the students not linking up leadership theory with their own experiences and plans?
4. Are the students finding their own words to clarify and discuss leadership?

There is much to be reassured about in the seriousness with which students write about their own leadership development and how they are applying these ideas / views to the management of others. It is also likely that the language used for a non assessed, in term exercise will be less formal and less aimed at impressing the reader than would be the case for an exam or job interview.

A similar survey to one undertaken with the final year undergraduates is currently underway with participants from the last seven years in the. This is a high level, masters rated, development programme aimed at developing future land-based industry leaders.

A comparative survey was conducted 120 rural business professionals; some with 15 – 20 years management and leadership experience. They had all been through an intensive two-week leadership training and development programme (The Worship Company of Farmers – Challenge of Rural Leadership Programme). The key results were:

- 25% fully completed the survey
- they also failed to link theory with practice
- their experiences were similar (to the students), but more wide ranging
- however they were less willing to admit their mistakes

7 Developing the understanding, developing the methodology

The authors are only just starting to explore their student's leadership understanding and capabilities beyond the usual assessments made in terms of:

- student marks
- student feedback
- employment statistics
- employer feedback
- anecdotal returning student feedback

While all these are valuable sources of information and commonly inform course and curriculum design, it is genuinely complex to test the engagement with a subject area.

How can we better test / question the development of student leadership understanding, development and application? One way will be to further refine our methodology; especially what we ask students about leadership. The content analysis of student leadership reflections will certainly become more refined; uncovering particular areas of detailed study.

8 Conclusions

By 'listening' to the words the rural students use with respect to leadership we can modify the teaching and learning we provide. With help from collaborating institutions we hope to compare student cohorts, cultural and ethnic diversity.

We are learning from our own students how the vocabulary of leadership is evolving and by mapping it with leadership models such as Drath we can track a path. Where the path leads could and should be interesting for staff and students alike. Be they students of business or businessmen as students.

Regarding the theme of the 7th ECHAE conference – 'Rethinking higher education in the food chain and environment: Profiling graduates of the future'; the authors hope that by teaching the practise of rural leadership, we are helping the learning and understanding of an important subject area outlined in the conference theme. Whether they are leaders or followers of the future, they need to understand and participate in a relational leadership dialogue.

The recent changes in the global economy and global education practices mean that it is leadership that is of key importance (rather than the noun leader). Leadership, through interpersonal influence and relational dialogue, is increasingly required throughout an organisation.

We expect our students whether graduates or rural businessmen to be able to, at least, debate knowledgeably about rural leadership as part of preparing themselves to be a competent member of the workforce.

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The contribution of training at the Agricultural University – Plovdiv to the Bulgarian accession to the European Union

I. Kouzmanova and I. Lecheva

Agricultural University, Plovdiv, Bulgaria

rektor@au-plovdiv.bg

Abstract

The mission of the Agricultural University – Plovdiv is to offer training and develop the education of Bachelor, Master and Ph.D. degrees and life-long learning in order to prepare specialists who can acquire and maintain qualification and skills enabling their successful realization on home and foreign labour markets. This mission is achieved by:

- Internationalization of education by adapting and applying the international standards for education and research and introducing compatible BSc, MSc and PhD study programmes.
- Acquiring knowledge resulting from the latest achievements of the global agricultural science research and practice.
- Synchronising academic and research activities with the strategic aims and priorities of the Bulgarian State and the EU.
- Promotion of student and teachers' mobility in response to the dynamic processes of modern times.
- Raising the awareness of the Agricultural University – Plovdiv to the present problems of agriculture and the agrarian reform.
- Optimizing the university structure in compliance with the restructuring economy and organization of agriculture, with the country priorities and with world tendencies.
- Developing further the autonomy and professionalism of the academic structures – faculties, departments, centres, etc.

1 Introduction

The process of uniting Europe has become a more concrete reality thanks to the great achievements of the last few years. We witness the growing consciousness of the political and academic circles of the necessity of creating a more perfect Europe of bigger borders and enlarged intellectual, cultural, scientific and educational dimensions.

"Europe of knowledge" has been acknowledged by everybody as an irrevocable factor of social and human development and as a necessary component of consolidating the European consciousness. Europe is able to provide for its citizens the skills required in order to face the challenges of the third Millennium with the awareness of shared values and living in a common social, cultural, scientific and educational area. In the period of the reform taking place in all the European higher educational institutions one of the major trends is the formation of their own future – compatible and efficient, as well as diverse and flexible common European higher education.

2 Challenges confronting the Agricultural University – Plovdiv

The transit from planned to market-oriented economy in Bulgaria forced new reforms in all the areas of social life, including in the higher education system. The principles on which it was built had to be changed because the economic profile of the country had been totally changed. Large unprofitable enterprises went bankrupt due to the lack of markets for their production, whole sectors of the economy were closed, and the crises in agriculture led to an abrupt decrease in production.

Privatization, although slow and painful, has endorsed the compulsory restructuring of the enterprises as a result of which many people with narrow specialization remained unemployed without perspectives of new realization in the labour market.

These social and economic changes have reflected on the structure and the role of the Bulgarian universities, including the Agricultural University – Plovdiv.

We are inclined to think about the university as something, which is so clear that any consideration of this matter is not worthwhile. And yet, I would like to quote only one of the many definitions, that from Magna Charta of the European Nations. According to it "*The university is an autonomous institution at the heart of societies differently organized because of geography and historical heritage; it produces, examines, appraises and hands down culture by research and teaching"*.

This definition contains the major functions of the modern university, i.e.:

- Creating new knowledge (research function);
- Spreading knowledge of a high level and preparing top-level specialists (educational function);
- Fulfilling social services (social function);
- Ethical activities, including social criticism (ethical function).

All of these functions of the Agricultural University have acquired a new meaning in relation to the accession to the Common European educational and research area (Bologna, Lisbon, Berlin), as well as to concluding the negotiations on Chapter "Agriculture" in the process of the European accession (2004).

Two decades ago the academic autonomy was unknown and the specialization in education was extreme. However these characteristics do not correspond to the changing labour market, to the necessity of broadly profiled training and to the need of life-long learning. The information society has added new issues to the skills of the university graduates. Every country must join the emerging global economy. This means increasing the compatibility of goods as well as knowledge and skills of people. At the same time education should be comparable in order to enable people take part in the world economy without limitations.

The review of the European educational system shows that there is not a single country with an ideal educational system but there is a conscious strive of the countries to develop further, to improve and to modernize their educational systems. Likewise the educational system in Europe is not unique but there is diversity not only among the countries but also within the educational system of a given country. Additionally the "market demand" for university specialists is an indisputable landmark about the perspectives of a given course. These factors add up to the conclusion that we should not be looking for standard schemes of higher education development. On the contrary, they demonstrate the role and the importance of the diverse approaches to the educational system development and modernization.

The greatest importance is to be attributed to the independence and autonomy of the university, which guarantees that the system of agricultural education and research is constantly being adapted to the ever changing issues and needs of society, to the ever changing conditions in the agrarian sector and to the achievements in scientific research.

The Agricultural University – Plovdiv faces internal challenges and problems, at the same time taking an active part in the establishment (the Bologna declaration, 1999) and in the realization of the European higher education area (Berlin, 2003). This includes the increased efforts for the improvement of:

- The University System of Quality Assurance and Control established in 2000 and preparing its international accreditation;
- The two-cycle system and doctoral and post-doctoral studies. The system was introduced at the Agricultural University in 1995 on the basis of the Bulgarian legislation for higher education.
- The system for acknowledgment of degrees and study periods abroad. The necessity of mutual criteria and methods of quality assurance is a real responsibility of our academic community. The increased mobility is already on a new quality level.
- The credit system. It has been developed from a system of credit transfer to a system of credit accumulation. Every student graduating after 1 July 2004 receives a Diploma Supplement (Bulgarian Higher Education Act of 2004).
- Establishment of the Centre of Life-long Learning.

The constructive participation of the student organizations in the Bologna process marked by the EU underlines the necessity of attracting students to various activities. Thus they enjoy the full rights as a partner in higher education management. We have started developing additional modules, courses and study programmes with a European content. Those measures will enable the Agricultural University – Plovdiv to easily join the common European higher education area and the European research area, which are the major pillars of the "knowledge society".

Special importance should also be attributed to the ethical functions of the university. In our everyday activities we are an example to our students when we are conducting experiments, when we are discussing and solving problems using a real academic approach, when we frankly express our opinion of social events and when we dare to criticise the government. In my modest opinion the ethical functions of the university are as important as the educational functions.

As a consequence of these principles, the mission and the objectives of the Agricultural University – Plovdiv have changed. The mission of the Agricultural University – Plovdiv is to offer training and develop the education of Bachelor, Master and PhD degrees and life-long learning in order to prepare specialists who can acquire and maintain qualification and skills enabling their successful realization on the home and foreign labour markets.

3 Strategic aims of the Agricultural University

The strategic aims of the Agricultural University – Plovdiv cover the following:

- Raising the educational process and research to a level of quality corresponding to the model of the leading European and world universities.
- Establishing compatible and competitive education attractive for the students and teachers from the foreign countries.
- Increasing the European dimension of higher education. Synchronising the curricula and study programmes with the European and awarding "convertible" diplomas to the graduates from the Agricultural University – Plovdiv by developing and introducing new curricula for each BSc and MSc course.
- Efficient use of the student qualification for the development of research and providing opportunities for spending a study period or career development in other higher education institutions in Europe and vice versa – training incoming students at the AU. The students are involved in educational activities as well as in research development and links with the employers.
- Co-operation and integration with other universities with the aim of updating the study programmes. We have established close contacts with 75 European universities and 6 Bulgarian research institutes.

- Student and teacher exchange with the aim of achieving maximum internationalisation of education and sharing experience. Annually about 250 students and 50 teachers spent a study period or practical training and deliver lectures in European universities.
- Raising the moral concern and ecological responsibility of students for preserving the environment and uniting the ecology of nature and man.

These strategic aims can be achieved by fulfilling the following tasks:

- Optimizing the university structure in compliance with the restructuring economy and agricultural organization, the priorities of our country and the world tendencies. Increasing the autonomy and professionalism of the academic structures – faculties, departments, centres and supporting units. The new university structure comprises 5 Faculties – Agronomy; Viticulture and Horticulture; Plant protection and Agro-ecology; Tropical and Subtropical Agriculture and Economy - offering 10 majors for the BSc degree and 20 MSc programmes. Five centres have are been set up: Centre of Life-long Learning, Centre of Information Technologies, Language Centre, Agro-ecological Centre and Research Centre.
- Improving the facilities and services for students and teachers with the aim of achieving the mission of the Agricultural University and the objectives set. Within the framework of different international projects new computers and laboratory equipment are acquired.
- Introducing new courses and improving the internal integration and organizational links among the Faculties and Departments for the more efficient use of the capacities of the human resources. New courses have been introduced in the last several years: 4 new BSc courses/specialities and 20 new MSc. courses.
- Encouraging teacher mobility in response to the dynamic changes in the socio-economic life, to the student interests and needs and to the EU criteria.
- Following one of the basic strategic aims, the most important task is improving the quality of education and raising it to a new level, based on the traditions and experience of Bulgarian higher agricultural education, on our own experience and on the best practices of the leading European and world universities. An internal system of quality assurance and control in education and research has been established.

Significant advance has been made in improving the efficient use of the capacities of the highly qualified academic staff. The teachers' efforts should be emphasised in relation to improvement of study programmes, including co-operation with foreign universities within the framework of different European projects and programmes – Tempus, PHARE, Socrates, etc. They also rely on intuitional solving of some problems and tasks. I do not underestimate that approach, which is often creative, and should therefore be applied, in our future activities. However, our experience showed the lack of sufficient analytical information. For this reason high priority has been given to sociological studies in the following areas:

- Sociological surveys for establishing:
    - The level of student realization after graduation from the Agricultural University – Plovdiv
    - Theoretical and practical training of the young people based on the employers' expectations
    - Self-assessment of the graduates who have become managers, businessmen, etc.
- Surveys about student confidence and satisfaction.
- Evaluation of the correspondence between student expectations and the study content.
- Survey about the position of the Agricultural University among the other higher education institutions training BSc, MSc and PhD students – curricula, study programmes, results achieved, with the aim of defining the social prestige of our University and its competitiveness.

The results of those surveys are used when optimizing the curricula and study programmes and when improving the whole organization of the educational process.

4 Concrete measures

Academic Affairs

- Defining clear rules and principles for sending students abroad for practical placement. Increasing monitoring activities, reporting the character of their work, the relations with the employers, duration of stay, appropriate period of the placement, results obtained, etc.
- More efficient use of our own facilities and available equipment for the needs of education and practical training and increasing the responsibility of the Departments. New opportunities are being explored for better links between theoretical preparation and practical training on farms, at banks, accounting houses, co-operatives, etc.
- An information system has been established about the knowledge and experience gained by the students and teachers during the specializations and study periods spent abroad.
- The results obtained in international projects and programmes are analyzed and popularized.

Curricula development should comply with student interests and needs, the necessities of the practice and the requirements and criteria of the European Union.

- Students are offered the opportunity of acquiring additional qualifications: following two different courses/specialties for excellent students after their second year of study; attending specialized courses, etc.
- The number of the free-choice subjects is being increased to meet the specific interests of the students.
- Well known Bulgarian and foreign scientists are invited in various ways and programmes as lecturers, consultants, scientific supervisors of Ph.D. students, etc.
- The number of MSc courses is being increased. The quality of teaching is constantly being improved.
- The modular structure of education is being experimented with in order to optimize the teaching staff potential and the exploitation of the available material basis.
- The Departments develop concrete plans for involving students in research and practically applied activities. The plans correspond to the needs for new and younger human resources engaged in teaching.

Research Activities

- The level of research studies has been evaluated in terms of contribution to the development of theory and practice, as well as about the role of the Agricultural University as a leading research centre in the country, comparing it to similar universities on the Balkans and in Europe.
- The organisation of research is based on long-term programmes by branches, problems, and etc. directions. Special research teams have been built for solving significant problems in agricultural science and practice.
- The research teams involve students, PhD researchers and other specialists to form schools for the scientific development of young people.
- A bureau for project design and a bureau of intellectual property rights in the area of crop science have been established. This has contributed to the enlargement of the work by groups with participation of students.
- Efforts are put forward in the scientific integration with Bulgarian and foreign higher education institutions, research centres and institutes, separate scientists, specialists, and managers from industry for the development of the theory and practice of agriculture.

- More and more research studies are conducted based on contracts signed with industrial companies and enterprises. The money received is invested in new laboratory equipment and used to stimulate the teachers and technical assistants.
  The possibilities of increasing the own resources of the Agricultural University have been explored. The principles of market economy in the management of research, of the experimental fields and of the supporting units are applied.
- A concrete plan was developed for achieving a better co-operation between the Agricultural University and the consumers for shortening the way of the research results to the agricultural practice and society.
  In this connection an open discussion is needed to raise the concern of the farmers and private producers to the University problems because they could really introduce innovations into practice.
- The consultant, analytical and expert activities are broadened to help the agricultural producers, firms and enterprises. Financial stimulation of the university researchers and the accredited laboratories regulates these services. The Laboratory complex received European accreditation and it was engaged in joint research studies with the practice.
- A Consulting Agency was established at the Research Centre with the responsibilities of doing research, suggesting ideas and developing projects. Thus the Research Centre is involved in finding external consumers – producers, firms, etc. - in order to answer the social expectations and to function as a centre of research and applied activities.
- European co-operation is further developed not only by the realization of international projects but also in doctoral and post-doctoral studies. Some of our PhD researchers have already defended their theses at European universities and in the USA.
- Conditions are being provided for research to become an integral part of all the higher education levels at the Agricultural University. The following rule is applied: research supports the BSc degree, it is an integral part of the MSc degree and it is fully realized in the PhD degree.

The realization of the mission, the strategy and the deriving concrete aims and objectives should be looked at as guidance for future action. They contain the priorities for the development of the Agricultural University and its contribution to the Bulgarian accession to the European Union. Two things deserve attention in this respect. Firstly, higher education is a comparatively conservative system. Cardinal changes can hardly be expected to take place immediately. Teachers and students unite and fully support the mentioned aims and objectives in order to be prepared for the new realities we face in the period of accession to the European Union. Secondly, the dynamic development of our country, the expansion of the number of students and the diversification of education create new types of problems and challenges for the Agricultural University, such as:

- Decreasing social and governmental resources;
- Inconsistency of the state policy for the research;
- Changes of the demographic factors reflecting on the number of the potential students and the necessity of attracting various social circles
- Increased competition among the institutions for attracting students and striving after the scarce financial provisions;
- Competition among the universities, on the one hand, and business circles initiating their own educational programmes on the other.

Those changes have created new possibilities for the future development of the Agricultural University and its promotion.

5 Conclusions

Meeting the expectations of the Agricultural University – Plovdiv during the period of the accession to the European Union is an indispensable part of the whole development of the reforms in higher education and agriculture in Bulgaria.

Bulgaria has fully achieved the formal compliance with the European dimensions set by the Bologna declaration and Chapter "Agriculture", thus manifesting a high degree of political readiness to participate actively in the building of the common European higher education area and in the process of accession to the European structures.

The process of European integration requires conscious national approach to the common goals with the clear awareness that the common European policy in higher education will be always complementary and directive, but will never fully replace the national approaches and issues.

Nowadays we face the challenges to work in an environment of competition in our own country, in Europe and in the world. Competition maintains the quality of higher education without excluding co-operation. We rely then on the authority and prestige of the Agricultural University – Plovdiv, on the rich research and training staff potential, on their experience, proven capacities and innovative thinking.

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Case studies in countryside management education

Eirene Williams

Seale-Hayne Campus, University of Plymouth, Plymouth, UK

eireneNDW@aol.com

Abstract

Consideration of habitat and environment is now an integral part of land use decision making. There is a growing need for suitable qualified and experienced people to decide and carry out appropriate countryside surveys and management operations. There is also increasing professionalism in this employment sector. The implementation of the Water Framework Directive provides a topical example of future manpower needs of this type. Some mismatch between available and desirable personnel clearly exists.

Feedback from those already involved in countryside management indicates that a judicious combination of knowledge, skills and practical experience plus certain personal attitudes and attributes is appropriate Once a clear idea of the specific expectations of employers and policy had been obtained, undergraduate courses at Seale-Hayne were designed and later modified as the employment sector evolved. These courses are both multidisciplinary and case-study based. Appropriate student experience was also incorporated. This paper describes these and discusses this approach as part of higher education provision. It will also touch on actual and potential general competences developed. Examples of coursework assignments based on real properties and their management problems will be presented. This is then linked to the career development of graduates.

Finally the characteristics of students entering the countryside management sector are explored, and the implications for their recruitment, on-going education and future careers are discussed.

1 Introduction to countryside management

The themes of the series of ECHAE conferences since 1992 have reflected the way in which all aspects of the food chain and the natural and socio-economic environments in which agriculture is practised have become relatively important throughout Europe. Higher agricultural education has adapted accordingly away from a purely production focus to a wider range of subjects taught and researched, perhaps all embraced by the term rural development. One area which has emerged during this process of evolution is countryside management.

Countryside management as a profession in the UK addresses the multiple use of land for whatever purposes are relevant at particular sites. Countryside managers may be primarily concerned with protected areas and reserves designated for nature conservation or landscape value. In the UK this does usually also involve farmed land but other dimensions such as wildlife may be paramount together with public enjoyment, education and employment opportunities. It has been regarded as a profession in its own right since the 1970s (Stratham, 1974; Countryside Commission 1978, 1979) and began to generate its own literature (Blacksell & Gilg (1981), Blunden & Curry (1985),Burnham (1985), Green (1985), Bromley (1990)).

One body which has been formed in UK specifically to support this area of work is the Countryside Management Association (CMA) http://www.countrysidemanagement.org.uk/. The CMA, founded in 1966, sees its role as striving to balance the complex and conflicting demands on land. The members have quite diverse ‘hands-on’ managerial roles in wildlife conservation, interpretation, recreation, education, sustainable development, community action and environmental protection. They have practical and field skills and knowledge but can also deal with socio-economic and business aspects of

their area of responsibility. As with most such associations the CMA promotes professional standards amongst its members, provides information and authoritative comment on countryside matters and informs policy making.

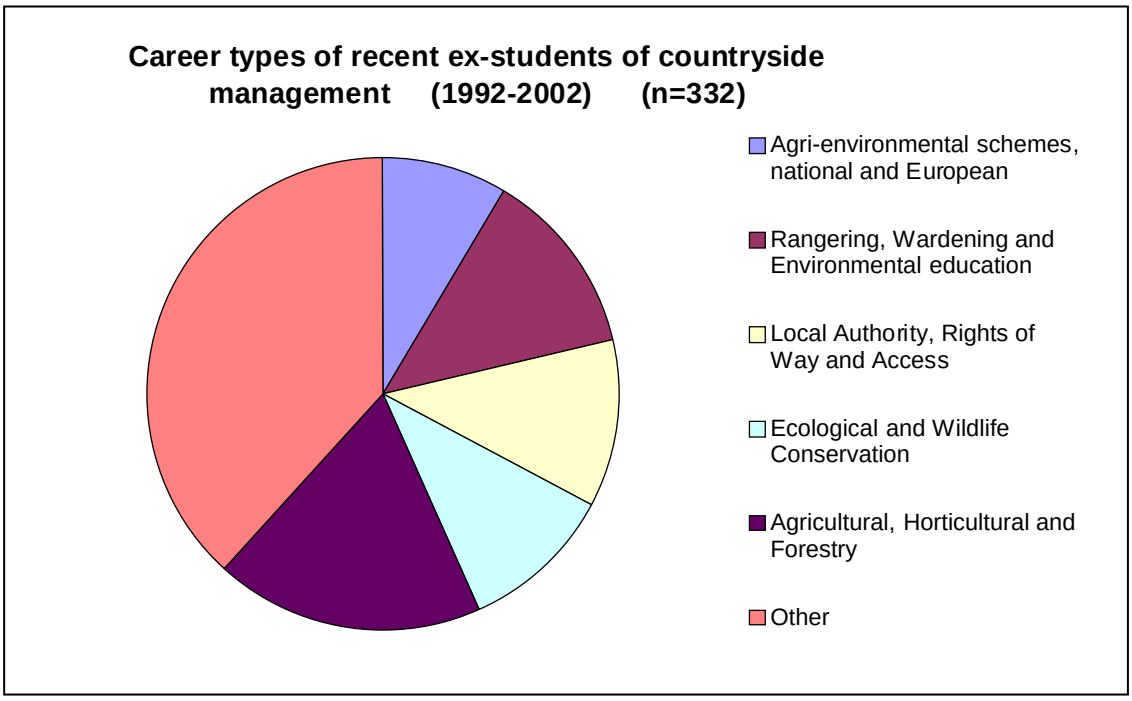
Another relevant body is the Institute of Ecology and Environmental Management (IEEM) http://ieem.org.uk/, founded in 1991, which has a more scientific focus on biodiversity and ecosystem functioning but also promotes professional standards, public understanding and contribution to policy making. IEEM's members might typically be consultants and currently many members are eligible for the new status of Chartered Environmentalist.

The point of these two examples is to show that countryside management is now a recognised profession with mechanisms for improving and assuring standards of practice and for entering into consultations at the highest levels about rural affairs. Discussion as to what the objectives of countryside management should be and how they should be achieved has continued (Barker (1998), Gilg (1991), Whitby (1994), Wilcock (1995), Green 91996), Dwyer & Hodge (1996), Potter & Lobley (1996), Bishop & Phillips (2003)).

2 Demand for countryside managers

In UK one well known source of information about countryside job vacancies in the Countryside Jobs Service (CJS) http://www.countryside-jobs.com/. CJS also publishes a series of detailed annual reviews of the job market that it covers. Since 1998 CJS has advertised 22,000 jobs with over 5500 paid vacancies being offered in 2003. Between 2002 and 2003 the average salary had risen by £1,000 to almost £15,000 per annum with the highest, a Director of Rural Policy for DEFRA in London, paid £110,000. Other fascinating facts such as recent disproportionate growth in jobs in Scotland can also be found in the CJS analysis. The qualifications and experience required of applicants are also analysed in detail. Thus the current job market is well characterised and in a way seemingly only in development elsewhere in Europe.

Further evidence of the current employment situation can be gathered from the careers of recent ex-students of BSc Rural Resource Management at Seale-Hayne. Employment statistics for these graduates are relatively good in quantitative and qualitative terms compared with other courses. The figure below shows that more than half the students surveyed have jobs in rural sectors and that the distribution of these between the five recognised divisions is fairly even.



This is one way of looking at the demand based on the careers of ex-students who specifically chose countryside management but there are many other people who work in this sector who come from other backgrounds: often ecologists now working in positions with a management dimension or managers in charge of countryside but who have little biological or agricultural background.

Estimating future demand is more difficult. One illustration is a sample study made for IEEM on the potential requirement of the EU Water Framework Directive (WFD) after 2006. In theory the procedure for dealing with manpower requirements of a Directive is that a Legislative Resource Impact Assessment is sent, in this case to DEFRA, and also in theory they can meet any shortfalls identified, in financial terms at least. In order to estimate this for the UK, 5 senior staff in the Environment Agency (EA) were contacted, 3 in English Nature (EN) and Scottish Natural Heritage (SNH), and some consultancies. They were asked about the quantity and quality of staff required and their availability.

The EA WFD team was already largely in place and doing preparatory work. EN has its existing Water and Wetlands group with 22 local teams but only 1 macrophyte person for England. (Macrophyte identification is a key criterion in the WFD). The rather surprising and somewhat cavalier response encountered from both EA and EN was that they could meet all their obligations by redeploying existing staff and dropping some other work. Any extra and specialised work they felt could be done by contractors or possibly universities. However ascertaining exactly how many experts in macrophytes etc might be needed or of their exact qualities was a step too far.
Natural wastage and expansion might require a little recruitment and retraining. They did however report a lack of suitable applicants for jobs except foreigners.

Consultants on the other hand who were expected to be able to fill gaps in expertise said they were not able to maintain experts on their staff permanently as they could neither afford to do so nor find suitable people when advertising. Universities had some important experts on their staff for example in hydrogeology and geomorphology but not in all areas and they tended to be rather research orientated.

In this example of the WFD as in other countryside management contexts, all the employers repeatedly bemoaned the lack of taxonomic skills, and of qualitative and quantitative field work skills relevant to monitoring in job applicants. Also required were associated project management and administrative skills; getting people to the right places at the right times to collect the data and then putting it somewhere useful for analysis. The poor standards of general literacy and numeracy in recruits when writing straightforward accounts of their work was also causing concern.

Thus the demand can be estimated in terms of quality and to some extent quality. The next step is to examine how and whether the output of higher education is likely to match this.

3 Supply of countryside managers

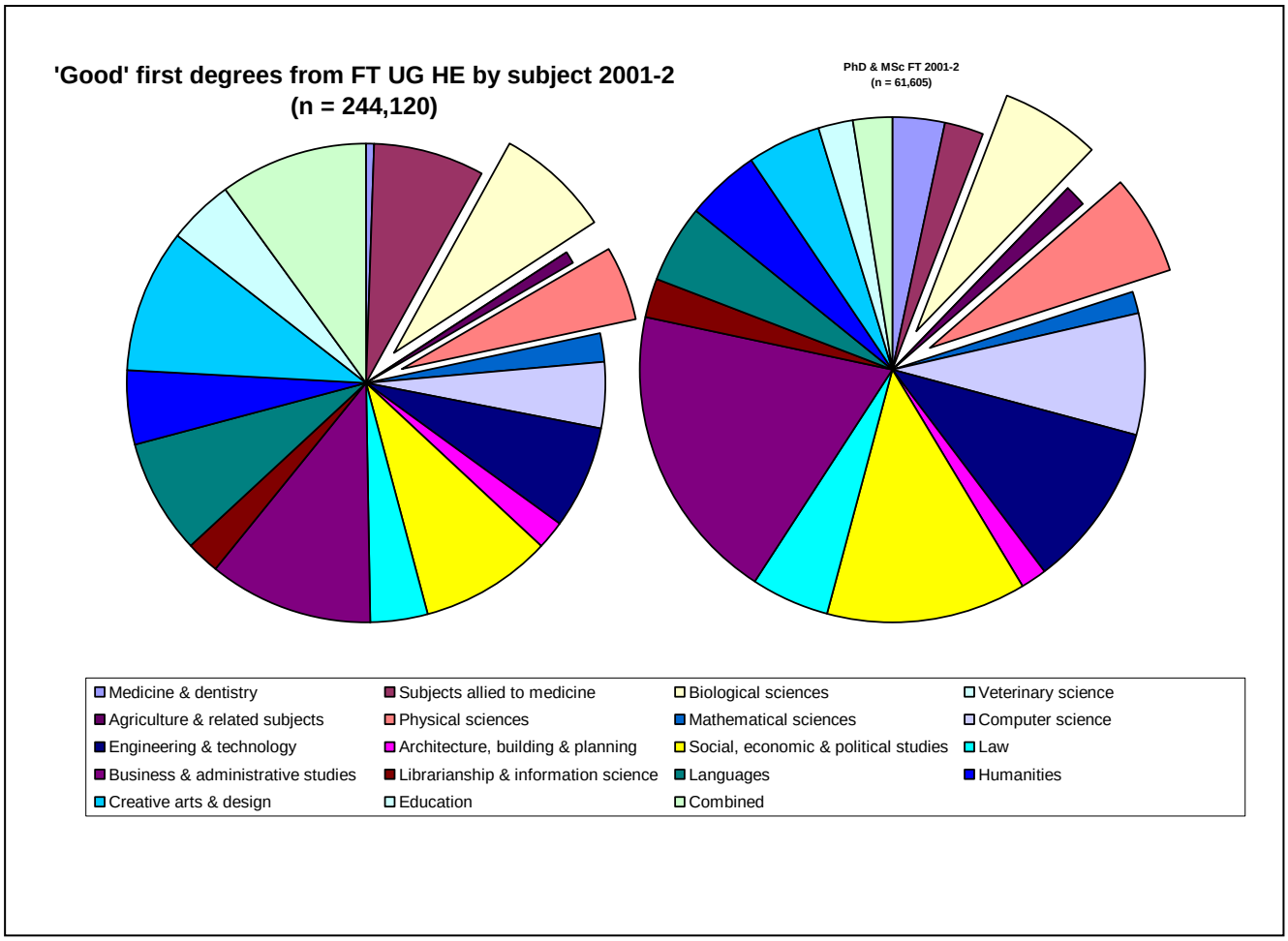
Information about the supply of graduates in the UK can be obtained by looking at Universities and Colleges Admissions Service (UCAS) http://www.ucas.ac.uk/ for the courses available, and at the Higher Education Statistics Agency (HESA) http://www.hesa.ac.uk/ statistics for the numbers graduating in various subject areas. It is also possible to phone a sample of universities posing as a potential student or careers advisor. However as mentioned above, in the past many people working in countryside management come from completely unexpected backgrounds like Classics. Most had a general lifelong enthusiasm for the environment however and perhaps went to university, if at all, at a time when environmental course were much less available or acceptable. Successful changes of career by individuals must however lie outside the remit of this paper.

It has to be assumed that these days most manpower is sourced from those with the background of a relevant first degree. A school leaver searching the UCAS database for courses using various appropriate key words would find results shown in the following table. However there is a tendency of

universities to stuff the UCAS handbook with a range of titles and combinations of words that market research show to be attractive. In the table the numbers of courses is presented with Countryside titles first, then other relevant titles in rank order. All initial numbers are then reduced by eliminating permutations and combinations of the same content.

UCAS keyword	Initial search	Actual number
Countryside …..	**51**	**12**
Botany	33	25
Aquatic/Water …..	47	14
Wildlife …..	64	11
Zoology	78	35
Environmental Biology	121	34
Ecology	274	38
Conservation …..	305	?
Environment …..	1632	?
Biological science	2528	?

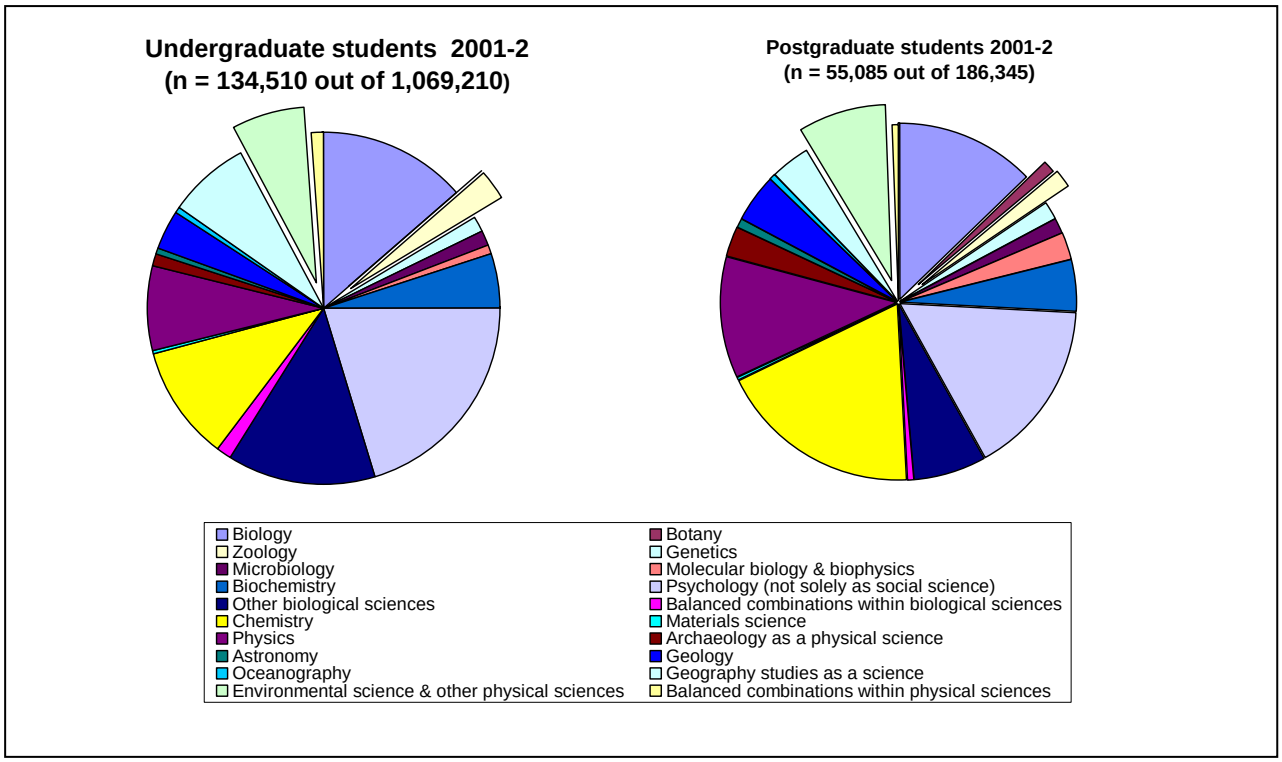
Following on from the real or apparent numbers of course, it is worth looking at the numbers of students emerging from these courses. The pie charts derived from HESA figures for 2001-2 show the quarter of a million Bachelors and 60,000 odd Masters or Doctorates in full time education in UK. Of these about 8% and 6% are doing Biological Sciences and 5% and 6% Physical Sciences.



It is difficult to say what the correct proportions might be, nor how these relate to previous eras, because it is debatable as to whether these should in any way match national manpower needs or

follow student inclinations. Fashions for business and media studies (under librarianship in HESA figures!) have been noted in the press. The HESA figures for graduates are not further broken down into sub-categories so it is necessary to look at their figure for students actually on the courses for that year to see if any or all of the science students are taking courses relevant to countryside management.

Below is a chart of those of the 1,000,000 full time undergraduates and 200,000 postgraduates who are doing Biological or Physical Sciences. Of these the sectors showing those doing environmental sciences, botany or zoology have been pulled out and a small proportion of these can be regarded as potential countryside managers. They total about 10% in each case or 2500 postgraduates and 11,000 undergraduates.
Not all of these and some of the others such as Biology will be suitable recruits to countryside management work but it is perhaps worrying that only 245 or 0.15% of British students are choosing Botany/ Plant Sciences

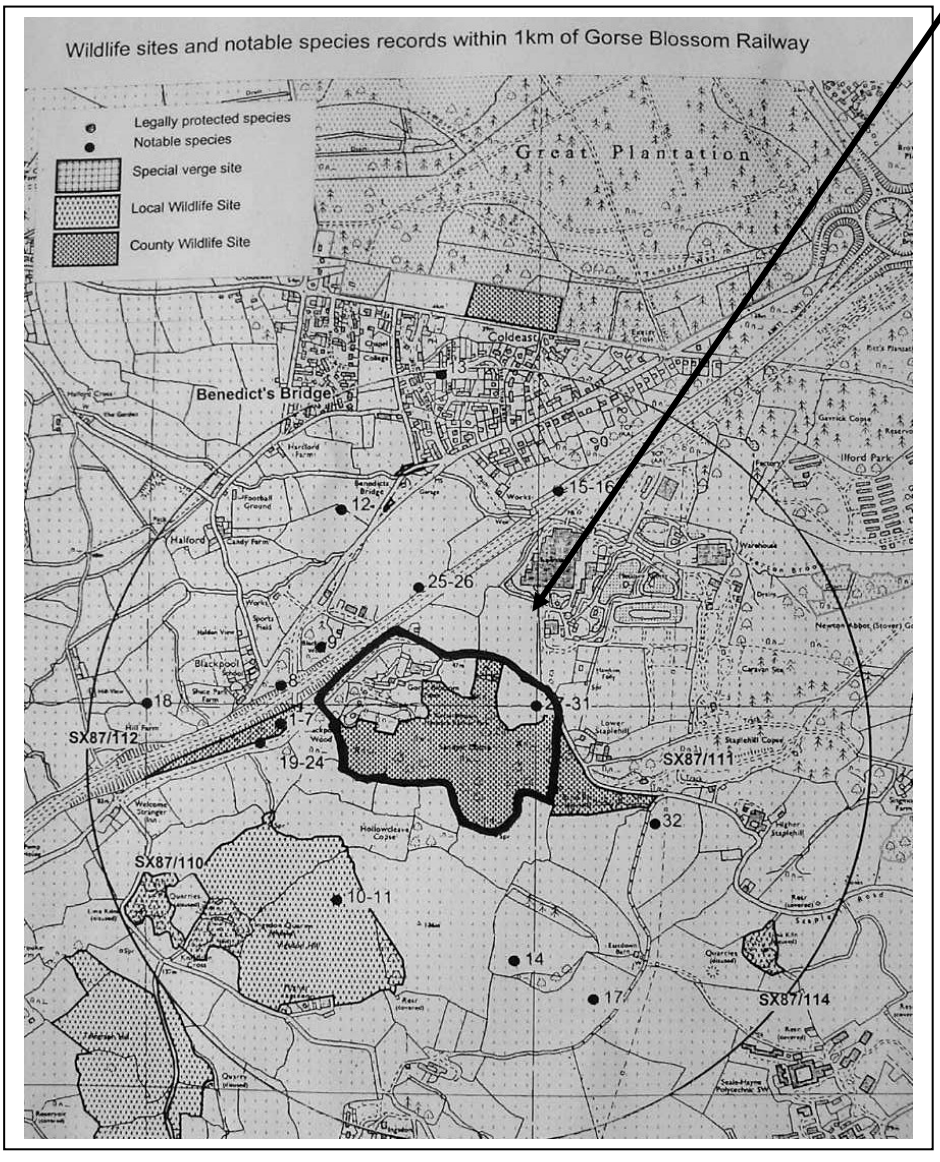


4 Training of countryside managers

Countryside managers need an unusually wide range of knowledge and skills and can perhaps best be described as generalists. They need an understanding of the sciences of agriculture and ecology, of the financial and human resource management of a rural business and of the socio-economic context in which they operate. At first students usually study the basic concepts of all these subjects separately (Briggs & Tantram (1997), Penker & Wytrzens (1996)). Later they need to integrate their knowledge to solve particular problems faced by modern land managers.

Diagrams of the BSc course that evolved at Seale-Hayne over 30 years in this area follow. It can be seen that in the first year three main areas are developed: management, science and social science, as well as some general modules common to all students. This particular mix has proven successful in training employable countryside managers during this time. Many similar courses have also been validated.

One very successful type of teaching and learning exercise has been the real site based case study. No virtual case study can ever substitute for this. Ex-students and employers confirm the value of this multidisciplinary experience. Fortunately Seale-Hayne is frequently approached by local land owners with offers of suitable sites. This may arise because of our reputation in this or for genuine need of ideas and practical help or as fulfillment of an agreement for educational use as part of an agri-environmental scheme.
One example of such a case study is the second year module called Habitat Management Planning, see BScRRM course diagram. A typical site would include agricultural land, woodland, wildlife interest and potential for public access and education as well as profitable use of all these. A recent example was the Gorse Blossom property:



Map of the Gorse Blossom site and surrounding area obtained from the Devon Wildlife Trust by students as part of their research for the case study.

The map shows designated wildlife sites and sightings of important species within a 1 km radius of the site.

It is up to individual students to interpret how this affects their plan for habitat management of the site

BSc (Hons) Rural Resource Management at Seale-Hayne

AUTUMN SEMESTER	SPRING SEMESTER
Stage 1	
BMGT 101 Financial Management	BMGT 102 European Business Environment
RURM 111 Forces of Change in the Countryside	RURM 142 Animal Identification
ANIM 101 Ecological Physiology	ANIM 102 Agricultural Systems
CROP 101 The Physical Environment	RURM 122 Plant Identification
SFAC 101 Information Technology	ANIM 112 Ecological Processes
Choose one from the following:	***Choose one from the following:***
TOUR 111 Tourism and Environment	*RURM 132 Plant Surveying*
AFSD 111 Food Products from Crops	*RURM 152 Animal Ecology*
RURM 121 The Diversity of Life on Earth	*TOUR 112 Tourism Behaviour*
	RESM 112 Surveying Practice and Elementary Building Structures
	RURM 112 Evaluating Countryside Change
Stage 2	
SFAC 200 Quantitative Methods	BMGT 200 Human Resource Management
RURM 201 Landscape	BMGT 202 Marketing
BMGT 201 Financial Management 2	ANIM 262 Quantitative Ecology
RURM 211 Rural Planning	**RURM 272 Habitat Management Planning**
Choose two or 20 credits from the following:	***Choose two or 20 credits from the following:***
CROP 221 Woodland Management	*RURM 262 Habitat Restoration*
RURM 221 Recreation Management	*RURM 252 Habitats International*
RURM 251 Habitats UK	*RURM 242 Field Trip*
RURM 231 GIS and Land Use (20 credits)	*RURM 282 Animal Monitoring*
RURM 241 Conservation Policy, Law & Planning	
Stage 3	
SFAC 301 Honours Project A	SFAC 302 Honours Project B
BMGT 301 Rural Policy Analysis	RURM 342 Contemporary Issues in Conservation Ecology
BMGT 311 Business and Organisation Strategy	BMGT 322 Integrating Case Study
Choose three from the following:	***Choose three from the following:***
RURM 301 Diversification and Integrated Land Use	*RURM 312 Applied Woodland and Forestry*
TOUR 321 Sustainable Tourism	*RURM 332 Representations of Rurality*
RURM 321 Environmental Assessment and Auditing	*RURM 322 Planning Problem Environments*
RURM 331 Relations with Nature	*CROP 312 Sustainable Agriculture*
RURM 351 Ecological Genetics	*ANIM 372 Zoo Conservation*
CROP 321 Environmental Impact of Land Use	*RURM 352 Biodiversity Conservation*
RURM 341 Rural and Environmental History	*ANIM 341 Behavioural Ecology*

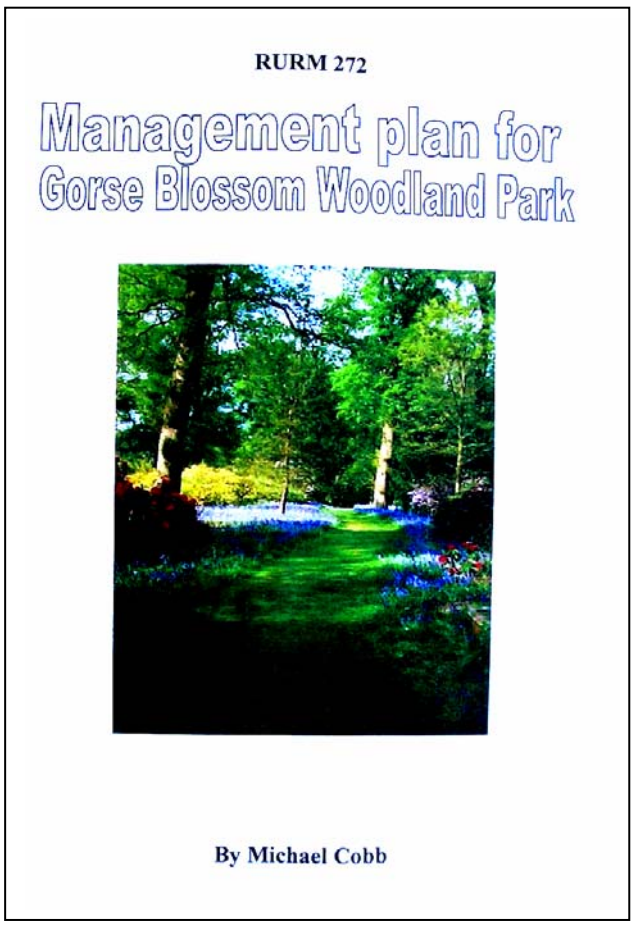
Key: Scientific Socio-economic Management General

In the figure the site is outlined but features of wildlife interest within the surrounding countryside are also noted. The site was partly pasture and partly woodland with little recent management. The pasture was let out for pony grazing. There was a miniature railway operating as a tourist attraction,

mainly for children. There was also a very neglected junior assault course. Some rather overgrown trails in the woodland had a few notices here and there about wildlife.

The owners had taken on the site expecting to make money from the railway but the Foot and Mouth epidemic in UK had meant the site was closed in their first year. The owners really needed to make money not spend it, but they also had a desire to improve and share the nature conservation interest of their site. The owners were possibly typical of quite a few people buying land in Devon at present, in middle age 'down-shifting' from the city, with rather vague aspirations about nature conservation and rural life.

Students visited the site as a group and the owners showed them round and explained their situation and ideas. Students then had lectures about how to assess such a site and prepare management plans for various aspects. They could revisit the site in small groups or with a lecturer on a number of occasions if they wished. Collaboration with due acknowledgement was encouraged in tasks such as compiling a species list for the site and searching archive records. For assessment, each individual had to produce interpretation and habitat management within three months. The latter had to be done in a standard but complex format in common use in UK (Leay, Rowe & Young (1986), Tait, Lane & Carr (1988)) and take account of various experiments, standard methodologies and published considerations for example Matthews (1987), Countryside Commission (1993), Winter, Mills & Wragg (2000), Warburton,(2000). This includes looking at costings and manpower requirements for their proposals. Although students found this hard they also admitted that assessing and prescribing for a real site and real owners with real problems was enlightening and valuable. This case study is also good at discriminating between strong and weak students. An example of a work plan page from a piece of student work follows:



RURM 272

Management plan for Gorse Blossom Woodland Park

By Michael Cobb

Work plan for 2007

Project code	Project title and qualifying phase	Pr	Se	Su	Pers	M/D	Funds £	Remarks
RP13/01	Collect data, hydrological – monitor	2	5	O	O	4		For records and habitat safety
RP12/02	Collect data, trees/shrubs – monitor	2	5	O	O	4		By monitoring will allow work plan to be planned
MH00/01	Coppicing	3	3	O	V	7		Coppice as required
MH01/03	Planting/sowing	2	3,4	O	O	3	200	Replace dead or diseased plants in hedge
MH03/01	Assisting natural regeneration	1	1	O	O	10		Important to save money and health of environment
MH64/01	Clearing/re-profiling	2	4	O	C	7	500	Secure banks and keep ponds clean
MH65/01	Clearing pond vegetation	2	3,4	O	St	3		Stop ponds from getting choked up
MA05/01	Path maintenance	1-2	1,3	O	V	15		Some paths may need to be cleared and maintained
MS10/01	Manage species, other vascular plants	1	1,3	O	O	7		Keep key flora at a manageable level
MS20/01	Manage species, lower plants	2	3	O,L	O	6		Important for survival
ME40/01	Maintain the site, remove unwanted structures/rubbish	1-2	1,3, 4	O,L	V	15		Pollution risks, wildlife hazards, tidiness
ME70/01	Equip site, provide/maintain rides/paths	2	5	O	St,V, C			Depends what needs doing on time & price
AP60/01	Administration, by preparing annual work plans	1		O	O			Must be done so that staff etc know what is happening
AP70/01	Convene meeting, annual programme review	1		O	Every one involved			To determine if all is running smoothly
	Sheet totals					81	700	

Summary	Labour			Funds		
		Owner	34m days		Labour	£500
		Student	3		Materials	£200
		Volunteers	37		Total	£700
		Contractors	7			
		Total	81			

Abbreviations:
Pr = Priority scale: 1 – 3
Se = Seasons: 1 = Spring, 2 = Summer, 3 = Autumn, 4 = Winter, 5 = All year
Su = Supervision: O = Owner, L = lecturer
Pers = Personnel: O = Owner, St = Student, V = Volunteers, C = Contractors
M/D = Man days

In their final year students had more choice but could and often did opt for further more complex examples of this type of case study with increasing emphasis on the business and financial implications of their proposals. In this the courses offered at Seale-Hayne did seem to prepare countryside managers and others in subsequent careers in the multifaceted rural sector of employment in UK well and appropriately.

5 Concluding points

As the profession of countryside management became established in UK more courses at higher education institutions were developed. In the 1990s this was to the point that recruitment was falling below sustainable levels to many of these. This was despite the popularity of vaguely environmental sounding courses at that time. In the ensuing phase of competition between courses and the expansion of higher education generally, entrance standards were dropped and the industrial placement year made optional. Both these that the lower end of the student cohorts were less well equipped to deal with the degree courses, but this did not always mean that the less academic students did not make satisfactory practitioners of countryside management.

Recruitment has tended to include two groups: school leavers and mature students. The latter have usually had some practical experience and come across graduates from Rural Resource Management or similar courses at work in the countryside. They realize they need a qualification as well as experience in order to make a career out of their interest in the countryside, and undertake a relevant course with a suitable reputation. These mature students are often in either their mid-twenties or their forties, both common ages for career changes. School leavers on the other hand tend to choose their courses more whimsically. At Seale-Hayne validation of a similar course under the slightly more glamourous name of BSc Wildlife Conservation has proved attractive to younger students. However it may prove that studying more ecology at the expense of some business management modules suits them less well for the types of career available in the countryside in future.

So, returning to the Water Framework Directive example, where is this super person to come from and be willing to work for … peanuts?

Environment Agency job advertisement 18/05/03
Ecological Appraisal Officer

"***Educated*** to degree/HND level or equivalent in an appropriate discipline or with ***relevant experience*** in freshwater ecology, you will have excellent ***communication, interpersonal and team working skills***, and be able to ***prioritise*** work and ***meet tight deadlines***. ***Computer literate*** with the ability to ***interpret data*** and ***write scientific reports***, you will need a ***full driving licence*** and, ideally, be able to ***swim***"

Maybe that is the whole problem?

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Learning networks for developing subject specific competences

J. R. Park[1], J. M. Wilson[2] and S. J. Maw[2]

[1]School of Agriculture, Policy and Development, University of Reading, Reading, UK
[2] LTSN Centre for Bioscience, School of Biomedical Sciences, University of Leeds, Leeds, UK

J.R.Park@rdg.ac.uk.

Abstract

There is considerable emphasis in the UK at present on raising the profile and improving the quality of learning and teaching in Higher Education Institutes (HEI's). A Government review of Higher Education in 1998[1] outlined suggestions for national networks to ensure good practice was promoted, shared and embedded across the wide range of HEI's in the UK. Prior to this there had been a variety of short-term subject-specific programmes and projects, although the outcomes of these were not always fully embedded across the broader Higher Education community. Whilst many elements of good teaching and learning practice existed, individual enthusiasts and innovators were isolated from other practitioners; in some cases, leading to a duplication of effort across the sector and potentially restricting the dissemination of good practice. In 2000 the Learning and Teaching Support Network (LTSN)[2] was established, with 24 Subject Centres and a Generic centre to promote high quality teaching and learning in the HE sector. The aim of these centres was to enhance quality, consolidate and build on earlier initiatives and to establish networks and channels for the development and sharing of good practice, skills and resources amongst academics.

In this paper we focus on one of the 24 Subject Centres, LTSN Bioscience, which exists to promote and support high quality learning, teaching and assessment in the life, biomedical, food, and agricultural sciences across UK Higher Education. We outline the development of this specialist centre, providing a framework for generating a teaching and learning network with a community spirit. We provide examples of good practice when trying to establish a network, together with reflection on less successful methods. A number of examples of successful network activities are outlined together with case study evidence of changes in teaching practice related to LTSN Bioscience activities. The LTSN Bioscience website provides a key focal point for networking and dissemination and provides a range of teaching related resources and information. (http://bio.ltsn.ac.uk/).

We conclude by considering the future of the Bioscience network, building on what is already established, looking to improve existing links with international bioscience higher educational community in Europe and beyond, and share practice, issues etc across subject boundaries, with cognate and non-cognate subjects.

[1] The Dearing Report (1998) HMSO, London

[2] As of the 1st May 2004, the LTSN is part of the Higher Education Academy (http://www.heacademy.ac.uk) and continues to promote high quality learning and teaching through the development and transfer of good practices in all disciplines. The Academy also aims to shape the thinking of policy makers and provide HE communities with a stronger voice in national debates and discussions.

The role of the links with employers in education at the Agricultural University – Plovdiv

I. Kouzmanova and I. Lecheva

Agricultural University, Plovdiv, Bulgaria

rektor@au-plovdiv.bg

Abstract

The major structural units of the Agricultural University – Plovdiv are the Faculties. They are responsible for curricula development and the organization of the student training process.

Traditionally the Faculties maintain close contacts with the potential employers of our graduates: the branch syndicates, various companies and firms, services, NGOs and institutions related to the scientific area of the graduates. They are not only direct "consumers" concerning the realization of the holders of BSc and MSc degrees but also they monitor, control and support the training, the activities of the Faculties and the practical training and pre-diploma practice of students. Representatives of these institutions display an interest in students' participation in the study process, set the issues of the labour market and meet the Deans of the Faculties with the aim of discussing and updating the curricula and study programmes.

1 Introduction

Education is the basic means of mankind for achieving better harmonic development and for overcoming poverty, isolation, ignorance and injustice. In that sense people are more and more interested in the aim and opportunities of education. In the Report of 1996 presented before UNESCO by the International Committee of Education for 21st century, it is stated that: "Education is a continuous process of improving knowledge and skills, it is also, and, maybe, above all, an extraordinary means of realizing personal development and establishing contacts among the individuals, groups and nations". The complex political, social, economic and cultural changes characterizing the democratic development in our country raised new issues concerning the structure and management of education as a whole, including to agricultural education.

It should respond to the strategic European aims stated in Berlin Communiqué:

- Making Europe the most competitive and dynamic knowledge-based economy in the world;
- Increasing the quality and efficiency of the higher education systems;
- Making higher education equally accessible to all;
- Opening the systems of education and training to the world;
- Strengthening the links of education with life, with research and society as a whole
- Attracting the employers for participation in the process of education with the aim of enhancing the spirit of entrepreneurship.

2 Links and relations between the universities and the employers

When realizing the higher education reform in Bulgaria one of the key problems is the link between the universities and the employers (labour market and the realization of university graduates). What are the issues in the relationships between study and subsequent employment?

First: In the framework of EU the term "employability" clearly refers to the issues how "youth at risk" under unfavourable labour market conditions can have the chance to get a job at all.

Second: "Employability" is often used with reference to the process of job search. The universities might contribute to the employability of their graduates by informing them about the labour market, coaching them for the job search, for example to act in job interviews, and by playing an active role in placing their graduates.

Third: "Employability" is used in relation to the process of "transition" from higher education to employment. However, the short time span between graduation and the beginning of regular employment does not necessarily indicate the rate of realization. It might show that the graduates are ambitious and that they opt for further study instead of employment or simply that the labour market in the region where the university is located is unfavourable.

Fourth: "Employability" might refer to all aspects of success: on the one hand, the remuneration and the social status related to it, on the other hand, the employment conditions such as working time, full-time versus part time employment, short term versus permanent contract, vacations, etc. In this framework employability does not refer to any specific competences and work tasks, but to a total bundle of individual characteristics and achievements in the course of study contributing to employment success as a whole.

Fifth: "Employment" might refer to the overall course of a career development. The less individuals trust that their career will run steadily and upward according to their talents, the more they have to shape their careers in a targeted way.

These five dimensions of the relationships between study and the subsequent professional life can be associated with "employment". Therefore "employability" might be justified in principle, though it is confusing to use the term for all the five dimensions. There are additional dimensions, which are not in the domain of "employment", but rather in work, work assignments, professions, etc.

3 Specific problems in Bulgaria

The specific problems related to employability in Bulgaria are:

Problems on behalf of the universities:

- Financial restrictions;
- Established structure, specialization by professional areas and available teaching staff with specific qualifications;
- Lack of regional strategies for continuing vocational training;
- Poor links with the employers;
- Insufficient information about the labour market demands;
- Lack of registers about the graduates;
- Modern material basis and equipment.

Problems on behalf of the employers:

- Lack of constant relationships with the universities;
- Lack of knowledge about the process of education and its quality;
- Lack of interest and stimulating tools for the provision of adequate practical placements for the students;
- Incidental participation in developing strategies and policies for the preparation, realization and evaluation of the study process.

The most significant problem referring to the efficient functioning and adequacy of the restructuring of the educational system is the lack of a framework and a development strategy for adapting it to the new issues of economy. Such a strategy should be based on and synchronized with the national and regional strategies for the social and economic development, adopted by a broad public consensus.

The Bulgarian National Economic Development Plan (2000 – 2006) identifies the priorities which should be therefore made concrete for the needs of the educational system and included in the List of Professions and the Unified National System of Standards and Professional Qualifications.

It is highly important to develop adequate mechanisms for applying the norms, with the aim of allocating precisely the responsibilities of each party having any relation to that sphere.

4 Possible directions for the development and change in the area of education

- ***Working out a unified strategy*** for development and restructuring of education. Devising a mechanism for interaction among the social partners and the involvement of the Ministry of Economy in studying the demand for vocational training, depending on the perspective and priorities of the economic development and the needs of the employers.
- ***Increasing the financial provisions for education***, finding more financial resources and identifying definite criteria for achieving the optimal and adequate structure and allocation of those funds.
- ***Establishment of a synchronized system*** for decreasing the qualitative disproportions by stimulating employers, on the one hand, and, on the other, stimulating the universities offering training of high quality.

5 Degree of satisfaction with the quality of education in Bulgaria

The great structural transformations in the economy of Bulgaria during recent years have led to significant changes in the demand for the labour force, including professions and specialisations. A positive tendency is the decrease in the demand for unqualified labour force (to 62 %) in 2003 and an increase of the positions for highly qualified specialists. The demand of specialists in agriculture has increased from 1.2 to 1.8 %.

A survey conducted by Alfa Research in 2004 showed the state of the art of education and the labour market, as well as the issues of the employers. Two alternative theses exist about education – labour market relationship. The first one is that education falls significantly behind the needs of the modernizing economy, and, the second, that Bulgaria has good traditions in education but due to the low technological level of most of the existing firms, the poor innovation capacities and high unemployment, the educated workers and officers are not able to be realized in accordance with their qualification and specialization. Comparisons between the employees and employers show marked contradictions in this respect:

	"YES"	
Does training at the universities in our country meet the needs of the employers in Bulgaria?	***38 %*** *according to employers*	***72 %*** *according to young university graduates*
Does training at the secondary technical schools meet the needs of the employers in Bulgaria?	***40 %*** *according to employers*	***37 %*** *according to young graduates from secondary technical schools*

High tension exists in university education and in the next years either an increase of migration for the young graduates or a serious pressure on the labour market for providing suitable jobs can be expected.

The question whether higher education provides capacities, knowledge and skills needed to the developing Bulgarian economy still remains open.

The employers identify the major problems in training in three directions:

- Education-and-qualification – insufficient preparation in the major, low qualification and lack of experience;
- Labour force qualities – low motivation and discipline;
- Financial – payment requirements.

It makes striking that modern issues related to the quality of the labour force such as computer literacy, language proficiency, ability to work in a team, up-to-date knowledge, etc., are not mentioned among the significant problems for the employers. It is a pity this fact is not due to the inadequate supply of such capacities but to the still low development and low issues amongst a large part of the Bulgarian firms. This is why a large proportion of the people employed with poor education and qualifications receive low payment and thus sustain poverty despite the fact they are engaged on the labour market. The conclusion is that the role of the education factor, which on principle becomes more important for highly economically developed societies, is still weak in Bulgaria because the level of development of Bulgarian firms is not high enough to stimulate continuously improving quality of education.

Under the present functioning of the Bulgarian economy, characterized by prevailing (over 90 %) micro- and small firms, i.e. with limited number of employees and low annual turnover, and, firms engaged mainly in the area of trading and services, the practices of staff selection follow three tendencies:

- Appointing educated people with experience;
- Lack of interest in cooperation with the educational institutions with the aim of training the staff in accordance with the needs of the firm;
- Relying mainly on personal recommendations - by friends, relatives, etc.

About 71 % of the firms included in the survey expressed a definite reluctance to cooperate with any educational institution. Only the big industrial companies made an exception, 43 % of them being ready to start such cooperation. The reasons for rejecting closer cooperation between commerce and education are mainly due to the present labour market situation characterized by supply surpassing demand and by lack of motivation for the enterprises. Lack of financial means is the basic reason for the small enterprises and for the private sector as a whole and the available big number of applicants – for the state enterprises.

Agencies for staff selection have started to emerge on the market, although only in 5 – 10 % of the cases do the firms make use of such services.

As a rule the firms are not interested in educational policy because they still appoint the necessary staff who gain professional experience and specialization during the work process. The educational institutions, on the other hand, are also not very inclined to cooperate with enterprises because their statute and their economy do not depend directly on the realization of the graduates.

Accession of Bulgarian economy to the common European market will impose strict observance of some standards in the activities and products of the enterprises, which will necessitate increasing the educational and qualification issues. The availability of a specialized staff that can help meet the European criteria and the action on a competitive market will turn into an important advantage for the enterprises which have managed to attract such a staff.

6 The experience of the Agricultural University – Plovdiv in establishing links and relationships with the employers in student training

The Agricultural University is a modern educational and research complex combining student training for the three educational degrees – Bachelor's, Masters and Ph.D. The Centre of Life-Long Learning offers qualification and re-qualification in 18 additional majors, thus answering the dynamic changes in the economy of the country, the restructuring of a number of economic branches and the introduction of new criteria in professional knowledge and skills of the specialists, experts and farmers. The unemployed, who are disadvantaged on the labour market, are offered new opportunities for training in courses on Agribusiness and Biological Farming at the Centre of the Balkan Environmental Association (B.EN.A).

At the same time conditions have been created for research, development of science, and, respectively, development of culture and creativity of the teachers, doctorates and students.

The Agricultural University is traditionally engaged in many international activities including the adaptation of education to the European requirements as well as participation in international projects. Along with good theoretical teaching, special attention is also paid to practical training of students conducted on the experimental fields of the Agricultural University, the experimental fields of research institutions, and at different European universities in the framework of the ERASMUS programme.

That is a prerequisite for the formation of skills guaranteeing the successful social orientation of the personality and attracting the employers' attention to training in the spirit of entrepreneurship.

The major structural units of the Agricultural University – Plovdiv are the Faculties. They are responsible for curricula development and the organization of the student training process.

Traditionally the Faculties maintain close contacts with the potential employers of our graduates: the branch syndicates, various companies and firms, services, NGOs and institutions related to the scientific area of the graduates. They are not only direct "consumers" concerning the realization of the holders of B.Sc. and M.Sc. degrees but also they monitor, control and support the training, the activities of the Faculties and the practical training and pre-diploma practice of students. Representatives of those institutions display an interest in student participation in the study process, set the issues of the labour market, and meet the Deans of the Faculties with the aim of discussing and updating the curricula and study programmes.

Here are some good examples of fruitful collaboration between the Agricultural University – Plovdiv and potential employers.

The Faculty of Agronomy

The Faculty of Agronomy has signed Contracts with more than 20 agricultural companies that provide placements for summer practical training of students during the course of studies and pre-diploma training. Every academic year *Agrodimex Company* from the town of Targovishte provides money for monthly grants to 6 excellent students.

After the training period meetings are organized between the companies and the University authorities with the aim of improving the quality of education and optimizing the curricula. Students share their opinion about the work going on at the respective companies. The agricultural enterprises suggest topics that are of interest to as research projects for students and teachers. (For example: Wheat growing and drought).

Annual meetings are organized between seed producing firms and students and university teachers for acquainting them with the latest production achievements and agricultural issues.

The Faculty of Plant Protection and Agroecology

- *The National Plant Protection Service* provides prestigious prizes to excellent graduates and offers vacancies to some of them. In 2004 5 specialists, graduates of the Faculty, have been appointed, one of them responsible for European integration. The Regional Plant Protection Services do their best to provide more placements for the pre-diploma practice of the students majoring in Plant Protection or Ecology and Environmental Protection.
- *AGRIA* has signed a Contract for Co-operation for providing monthly grants to students who have developed thesis on their products. They also offer part-time work to disadvantaged students to support them financially. They also give special prizes to the excellent graduates.
- *Dow Agro Sciences* organize the traditional annual meeting with third and fourth-year students presenting their new plant protection products to them. The company provides financing to students for developing their Diploma thesis and prizes to the graduates with excellent grades.
- Similar contacts are being maintained with *Syngenta*, *Monsanto*, *BASF*, *ABM*, *Agrostar*, etc.
- The Jubilee Conference on the occasion of the 50th Anniversary of the higher education in Plant Protection in Bulgaria was totally financed by different enterprises and companies
- Organizing demonstrations, new product promotions, joint scientific events such as workshops and conferences with the National Plant Protection Services and different leading companies.

7 Financial support

A large number of students from the Faculty of Economics get financial support for paying their tuition fees by different companies, according to Bulgarian legislation. Data are presented in the table below:

	Agricultural Economics		***Tourism***	
	Full-time Students	Part-time Students	Full-time Students	Part-time Students
Total number of students	365	276	114	67
Students by Article 21 – requested by the companies	37	45	22	16
% of the total number of students	10.14 %	16.3 %	19.3 %	23.9 %

The Agricultural University tries to attract the attention of the employers and the society as a whole for discussing the problems of higher agricultural education. It is a part of the University policy for the better realization of the graduates on the labour market.

The examples of good relationships between the Agricultural University and a number of national and regional structures and companies also result from the important fact that University graduates have been working in them making prosperous careers, and these graduates are always ready to cooperate with their Agricultural University.

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New directions: A summing up of conference contributions

Where do we go from here? - Where have we been in the last few days?

Eirene Williams

Seale-Hayne Campus, University of Plymouth, UK

eireneNDW@aol.com

The 7th European Conference on Higher Agricultural Education (HAE) chose as its theme 'Profiling graduates of the future'. This was the second conference of the series to be held as standing committee of and jointly with the Inter-university Consortium for Agricultural and Related Sciences in Europe (ICA). Over 100 participants from about 24 countries debated the changes that had and were taking place in HAE as it continues to react to changes in its sphere of operation. In particular the conference focused upon competences, which led on from discussion of learning outcomes at ECHAE6. The conference was structured into three plenary sessions and four sessions of contributed papers, plus five optional workshops and meetings of the ECHAE International Committee and the ICA and NATURA general assemblies. The Proceedings contain the texts of keynote and contributed papers. This summary considers each of the 7 published conference themes in terms of how this participant felt they were addressed in the conference and then makes some concluding remarks..

1 What are the relevant competences for the future?

- What are the expectations of society, industry and the students? Are these expectations realistic and achievable?

Statement of competences with which students are expected to emerge from HAE, rather than syllabuses or even learning outcomes that they cover within it, is clearly now seen as the way forward. Participants in this conference were usefully reminded of and updated on the requirements of the Bologna Declaration and subsequent amendments in this respect. In particular the Tuning Project was providing information about what competences employers, academics and students expected in certain subject areas, and was providing some useful categorisation and harmonisation. Evidence presented about expectations in other areas and for society in general was sparser and obtained less directly, even deduced. This could be seen as a failing of HAE institutions in Europe to ask rather than guess what might be required of their graduates. It was however generally agreed that holistic reflexive systems approaches with socio-economic and ethical dimensions on a par with science and technology were now appropriate to rural and agricultural development and hence to HAE. This was possibly idealistic rather than realistic. Pragmatic assessment of what was achievable given the current starting points in HAE in Europe might be more appropriate. It was also felt that HAE was naturally systemic and multidisciplinary anyway, and that this should be emphasised more whenever possible.

- Does society and industry need higher education institutions to educate students in the disciplines of agricultural sciences and management?

There was considerable debate about the role of universities, whether as bastions of scholars, scholarship and research or as vocational training institutions or both. It was also pointed out that needs and wants were not necessarily the same in this context, and that most participants were reluctant to be totally market-led. The significance of research and its assessment in limiting the resources available for developing teaching and learning was bemoaned by several participants. The spectrum of suggestions ranged from forgetting HAE to masterminding a renaissance.

- How should the balance be set between the development of generic and subject-specific competences in degree programmes?

There was general agreement as to what generic competences were likely to be required in graduates of the future, and team working seemed to be high on the list. The main challenge seemed to be to decide whether generic and specific competences should be developed separately or in an integrated way within the curriculum. Views of participants varied about this and also as to whether the generic elements should be developed explicitly or more stealthily introduced. There was also mention of the promotion of entrepreneurial culture in many universities and where this fitted in.

2 The development of relevant competences – case studies and innovative approaches

- Diversification and specialisation between and within universities: exploiting opportunities for the development of specialised courses; supporting change through interuniversity collaboration; division of competence through strategic planning

Several successful and innovative examples of collaboration between universities both intra- and internationally were presented at the conference. However these usually seemed to be serendipitous rather than strategically planned.

- Implications for recruitment and marketing: examples of successful marketing strategies and initiatives; qualities of entrants; quantity and manpower planning

Recruitment to HAE was a serious problem in all the countries represented at the conference. Reported attempts to market positively, to change titles of courses and to diversify course provision had brought limited success. In addition the expansion of HE in many countries was not bringing in a proportionately larger number of students to HAE but often lowering the standard of entrants as well. Some associated problems with the competences of modern school leavers were also raised in discussion.

- Developing the university's capability to deliver life-long learning; designing multifunctional curricula; supporting continuing professional development requirements

This area of HAE work seemed to be developing well and to have great potential, subject to the resource limitations frequently mentioned by those presenting case studies. However this area may not be a priority for every HAE institution at present.

- Pedagogic implications: developing generic and subject specific competences together; distance and e-learning; problem based learning; multidisciplinary approaches

The competences that exist amongst academic staff to develop suitable course materials and deliver them using modern technology and in multidisciplinary teams when appropriate were demonstrated in several presentations. However the value of face to face interaction with fellow students and enthusiastic lecturers was still considered an important facet of HAE experience.

In conclusion a fairly superficial SWOT analysis is offered for higher education institutions operating in land-based subjects as follows:

Strengths include of course staff with expertise to carry out teaching, research and consultancy in relevant areas. Also universities do have the facilities and experience to deliver courses. Universities are now also increasingly aware of the need to foster transferable skills in their students and equip them for lifelong learning.
The latter can also be viewed as one of the ***weaknesses***. The tendency to focus on generic skills is happening inevitably at the expense of subject specific skills. Also fashion in course choices amongst students is driving universities to validate and market courses that may not meet the manpower needs

of the nation. All courses seems to have diminishing levels of practical work; not perhaps the glamorous or exotic short residential field course but the ”little and often” exposure that finally gets the survey and laboratory work fast and professional. Cost and safety are issues here.
Higher education institutions have ***opportunities*** to lead instead of following. They could be more in league with politicians to anticipate the employment market and manpower needs and to define new competences and even revive skills. If a wider range of modes of learning are also in the pipeline, diversification into short courses and summer schools in fulfillment of Continuous Professional Development (CPD) requirements and general expansion of individuals' capabilities. “Widening participation” initiatives may also encourage non-standard applicants especially mature people to embark on university course and enrich the quantity and quality of suitable employees. It might even be appropriate to consider HAE as the new Classics, a degree taken as a good general background to a range of careers by students with or without a specific goal. Understanding of agri-environmental systems is desirable in all citizens, and the systemic and general skills involved in HAE are also widely applicable in many jobs. The HAE community should not miss an opportunity here!

However threats are perceivable, at least in UK, as what is actually happening is that due to lack of demand many land based courses are actually closing. At the University of Plymouth the academic year is being altered so that routine teaching is not done before October or, more importantly, after April. This is the death knell to most substantial plant and animal field studies. Finally “widening participation” can also be a threat as an influx of students with non-standard and foundation degree backgrounds can slow a class down however enthusiastic they may be.
Nevertheless the root of any recruitment problem must lie in the schools and in public perception of the HAE sector. Retreat into a bastion of HAE tradition will not help.

3 Final thoughts

The 6th ECHAE conference concluded with 7 important messages about harmonization and quality assurance in HAE. Of these, progress on harmonization, standardization, exchanges, relevance of programs, quality of teaching and research, and continuing professional development was evident in the papers and discussions at this 7th conference. However as the focus of the 7th conference was somewhat more philosophical, some different messages emerged. However at the end some practical actions seemed appropriate and I presented these in the form of my Things to Do List which seemed to strike a chord with many participants.

My Things to Do List

- Write clearer statements of the expected outcomes in terms of competences of my modules and programmes of study for students and wider society
- Include generic competences and ethical considerations consciously if not overtly
- Make students (and colleagues?!) fully aware of and frank about their current competences
- Develop the will and capability to restructure courses to develop any specified competences in students
- Explore existing and potential good practice in other institutions and seek collaborations across Europe
- Find the time and energy needed for pedagogic redevelopment and to estimate future manpower needs in the face of pressure to do publishable scientific research
- Seek moral and practical support in this from the highest and widest levels of HAE institutions and society

Defining pathways for the future: workshop and roundtable discussions

The conference was structured into three plenary sessions and four sessions of contributed papers plus five optional workshops. These workshops covered a range of topics from techniques such as problem-based learning and the use of teaching cases to the development of language skills within science courses and the problems of graduate employability.

This brief description does not give a detailed account or conclusion of plenary discussions or workshop sessions but attempts to provide an overall idea of the topics under discussion in higher agricultural education today.

1 What are relevant competences for the future?

During the opening plenary session three graduates had accepted the organisers' challenge of presenting their views on "Strengths and weaknesses of my degree in relation to the challenges of my current job". *Michele Cea* graduated in Biotechnology from Modena University and is currently employed by TetraPak, Italy, *Katarzyna Wyporska* is a graduate in Interdisciplinary Studies of Environmental Protection from Warsaw Agricultural University and *Bert Vanhoutte* graduated from Ghent University as a Bio-Engineer in Chemistry and subsequently Ph.D. in Food Sciences and is employed by Aveve Dairy Products in Belgium. These three recent graduates provided an insight into how they felt that their degree programmes had fitted them for their current jobs and provided a fitting platform for discussing what are relevant competences for the future.

2 Problem-based Learning

A workshop on problem-based learning was organized by Robert van Haarlem (Wageningen University, NL) and offered an introduction into problem-based learning and the preparation, use and evaluation of teaching cases as discussed in the classroom. The workshop provided participants with:

- basic knowledge on Problem-based Learning and Teaching Case Method,
- basic knowledge on how to write a case, how to teach and learn with cases and how to evaluate a case-class,
- better access to important information.

The Teaching-case Method is one of the many teaching-learning methods that are available to teachers and learners. It is a powerful method to train students for all kinds of decision-making situations and/or design-development situations they may face later in professional life.

A case is a description of such a real-life situation on the basis of the presentations of actions of one or more persons, and often the prime actor faces the challenge to make an important decision. Different approaches to the utilization of cases exist. For instance, after individual reading and small group discussion, students analyze the situation identifying the various perspectives of the actors, develop plans of action and implementation, foresee consequences and communicate and defend their findings in the class room under the guidance of the teacher. But also a small group of 3-8 students may put to work by the teacher, and decide among themselves how to organize the work, formulate a plan and specify the targets to reach. However, in all situations the teacher is both content expert and process facilitator.

3 Design and delivery of Web-based case studies

The subject of this workshop was good practice in the design and delivery of on-line case study teaching materials to support student centred learning project work in European higher education institutions.

The Workshop was presented by Philip Cain (University of Newcastle, UK) and Lars Stoumann Jensen (KVL, Denmark) and was based on the findings of a Socrates Minerva funded project – **WebCase** (www.webcase-online.info) – which has developed a suite of web-based case study modules conforming to a common format and has evaluated them in courses across Europe. The WebCase partners outlined the lessons learnt from the project and explained how these lessons could be put into practice.

Participants were given the opportunity to explore the case study materials on-line, and then to discuss the problems and opportunities of mounting their own learning resources on the web. For those participants interested in hands-on training in how to upload their own Web-based case studies using the WebCase techniques, this workshop was followed by a post-conference workshop *Building Web-based case study learning resources for student project work*. Here participants were instructed in the design, development and uploading to the Web of their own case studies.

4 Present and future jobs for graduates in agriculture and related sciences

This workshop was organised by Han-Henrik Jørgensen (Association of Danish Agronomists) on behalf of the European Confederation of Agronomist Associations (CEDIA) and was aimed at analysing the dynamics of the present job situation and forecast possible job markets in order to enable universities to adjust curricula for future graduates.

The differences and similarities of the job markets for graduates in European Countries will be described based on presentations from France, Germany and Denmark, and strengths and weaknesses of the present degree programmes as seen from the professional organizations' viewpoint were highlighted.

The following discussion dealt with how agricultural universities and faculties in Europe can meet the future demand from private and public companies and organisations in order to offer an attractive education.

The workshop gave participants a detailed impression of the present and future job market in Europe as well as to some extent in the rest of the world, and contributed to a clearer view on the necessary qualifications/curricula required by future graduates.

5 Linking language and science learning

This workshop demonstrated the potential benefits for language teachers and scientists of agriculture and related sciences when the development of language skills is embedded within the science and management courses, and discussed models of how language teachers and science teachers can work together successfully within a course.

The workshop was organised by Johann Fischer (University of Tübingen, Germany) and was based on the findings of a work package within the SOCRATES Thematic Network Project AFANet, which acts under the name HERMES (http://www.uni-tuebingen.de/hermes/). HERMES aims at the improvement of language teaching and training in the area of languages for agricultural and scientific purposes.

The workshop dealt in detail with the following topics:

- the results of the HERMES surveys to investigate co-operation between language teachers and scientists
- the results of co-operation in joint material development
- the results of distance learning courses based on a team-teaching principle within the MINERVA WebCase Project
- models of best practice for interaction between scientists and language teachers.

The discussions raised awareness of the synergies to be developed between the two groups of academics and to make practical plans to implement them.

6 Monitoring of EU-funded CGIAR research projects

NATURA organised a project workshop to highlight the kind of research projects developed in the International Centres for Agricultural Research CGIAR Centres and how this kind of project may contribute to the main challenges the international scientific community has to face: poverty alleviation and sustainable development in developing countries.

The workshop presented a monitoring exercise of some CGIAR projects carried out in 2003 by the NATURA network on behalf of the European Commission, and discussed the outcomes of the monitoring of three projects developed respectively in the CIP (International Potato Centre), IRRI (International Rice Institute) and CIFOR (Centre for International Forestry Research).

The aim of the workshop was to give participants a better understanding of the international agricultural research system, with the view to allow a strengthened contribution of European Research and Higher Education institutions.

7 Defining pathways for the future

In a concluding plenary session participants split into groups and the discussion was centred on two questions stemming from the conference sessions and central in defining pathways for the future:

- Industry needs system-thinking graduates in agriculture and related areas. How do we stimulate society to recognize this in terms of student recruitment?

- What are the barriers to placing greater emphasis on the development of generic competencies in your curricula?