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PEDAGOGIC EXPERTISE:

Pedagogic self-Reflection:

In the course of years I have been teaching many university courses at all levels. My pedagogical principles are based on the fact that different methods of learning are suitable for different students and for different courses. In general, my principles focus on student learning rather than teacher performance. No single teaching method can be the best in all cases. The applied teaching method must be adapted to the students' competences and the specific courses in question. These principles have been developed on the basis of many years of university teaching on all levels, from lectures held in big lecture theatres with 160 first-year students, to seminars in class rooms for more advanced students and group discussions with only about ten or fewer master and PhD students.

The starting point of my pedagogy is that my teaching aims to be based on updated knowledge and most recent research, focusing on both theory and the practical application of the knowledge. The overall objective of my teaching is to enable students to take responsibility for their own learning process and to structure this process. I expect my students to learn to apply theories analytically to related issues, and to work methodically with scientific problems and to reflect critically and creatively in order to develop their own personal and independent way of academic thinking. A basic concept of my pedagogic principles is that my lectures should not only be based on inspiring updated knowledge, but they also should support and facilitate student learning, and that a major part of the learning process must take place outside the lecture hall as own independent studies, perhaps supplemented with more or less informal group work among like-minded students.

I use a mixture of different teaching forms, depending on the number of students and their level of knowledge and motivation. I pay particular attention to encourage a constructive dialogue with my students, and for more advanced students and especially PhD students I always try to stimulate critical reading of the original literature, and call for suggestions for alternative interpretations or suggestions for improved experimental design to solve a specific problem, and for suggestions for settling conflicts between different research groups or individual authors revealed during the discussion of original scientific articles. Follow-up seminars or guest lectures where the students meet the actual authors of some of the papers they have read in order to discuss the perspectives or perhaps some unclarified scientific questions can be extremely stimulating, and this kind of interactive teaching is in my view very important especially for Master project and PhD students - and moreover stimulating for the supervisor!

Over the years, I have supervised many bachelor projects, more than 40 MSc candidate research projects, and 7 PhD projects. In my opinion, the ability to write a short, clear and well-organized project report ought to be thoroughly instilled in all students. I am rather

uncompromising in this matter (though kind and helpful), and my students are often required to rewrite and condense the text many times, the final result being the highly valued reward. Many of my former students have expressed their gratitude for this training. I always tell students that the writing of reports - or scientific papers - is an obligatory part of any future academic job. Writing is an academic activity, and supervisors are responsible for equipping students with the most basic tools for writing not only good scientific reports and journal articles, but also for writing at different levels for different 'audiences', and different purposes.

Teaching Experience, Teaching Materials and Course Development:

In the course of years I have been responsible for teaching and establishing several courses at all levels:

- 1) General Ecology: this formed part of a course in 'Environmental Biology' of the basic education in natural sciences at the University of Southern Denmark, which yearly attracted approximately 160 new students. For this course, which I developed together with two colleagues and run for 15 years, I wrote a textbook: 'Basisbog i Økologi' (see Publication List II with Danish titles, #21) which has also been widely used at engineering colleges, teachers' colleges, and upper secondary schools. This short, scholarly and pedagogical book has been revised and reprinted several times since it was published in 1986. As a supplement to my theoretical lectures, I have published a large number of popular-scientific articles dealing with different actual environmental topics that were treated on group-discussions with the students (see Publication List II). Finally, I have developed a number of obligatory laboratory practical manuals for this course. The blending of theory, seminars with group discussions, and practical laboratory exercises proved to be a successful and highly appreciated by the students to judge from the yearly evaluation questionnaires.
- 2) Marine- & Brackish Water Ecology: laboratory and field course for basic natural science students. For this course, which is followed by about 20 students every year, I have written a compendium in Danish ("Marin- & Brakvandsøkologi", 63 pp.), supplemented with a practical guidance book (42 pp.).
- 3) Fjord Biology: advanced laboratory and field course with the emphasis on experimental ecology. For this course I have written a guidance compendium.
- 4) Marine Biology: advanced course in marine biology. Theoretical lectures supplemented with a mini cruise on the Great Belt and subsequent treatment of collected biological material and physical-chemical data. Teaching held in English.
- 5) Suspension Feeding: advanced theoretical course based on short lectures and close reading and subsequent group discussion of original scientific literature on bioenergetics of suspension-feeding marine organisms. Teaching held in English.
- 6) Biological Oceanography: new 2-year international Master's programme open to students with a bachelor's degree, consisting of compulsory courses, elective courses and a research project. First year: basic studies in oceanography at the University of Kiel followed by advanced courses in oceanography and resource management at the University of Southern Denmark. Second year: research project in Biological Oceanography carried out either in Kiel or in Odense and may be experimental or oriented towards

administration and management. I have been responsible for the development of the theoretical part of this course (Biological Oceanography II) as well as one of the field courses (Biophysical dynamics of Fjords, see below). Together with a number of internal and external colleagues, I have written a Compendium. My contribution consists of 3 chapters (66 p.) dealing with consumers of the primary production. Teaching is held in English.

7) Biophysical Dynamics of Fjords: the primary aim of this experimentally orientated field course, which I have developed and currently am responsible for, is to provide knowledge on especially the interactions between key filter-feeding organisms and water flow. Additional focus is on describing the biological structure and organic matter and energy metabolism in a shallow water fjord system, including the importance of tidal and density driven currents for water exchange and hydrodynamics. Finally, the aim of the course is to present experimental biological and hydrographical working methods and demonstrate examples of bio-fluid mechanics and hydraulic modeling. For this course, which is taken by about 20 students every year, I have written a compendium (44 pp.). Teaching is held in English.

8) From Molecule to Ecosystem (BB501): basic course for about 150 first year students on which I give lectures in ecology in 2010 and 2011.

Experience as Supervisor and Organizer:

In addition to the obligatory teaching, I have held more than 60 invited guest lectures, seminars and talks at home and abroad. I have supervised many bachelor projects, more than 40 candidate (M.Sc.) research-projects, 7 Ph.D. projects, and further since 2003, I have supervised 3 international students holding a Leonardo da Vinci grant (6 or 12 months stay). In May 1998 I organized and carried out a 12 days Nordic Ph.D. course: 'Benthic Filter Feeders and Hydrodynamics' at Kristineberg Marine Research Station (KMRS), Sweden. In July 2000 I organized a session on 'Benthic filter-feeding and plankton dynamics - importance of currents and mixing' at a conference arranged by the American Society of Limnology and Oceanography (ASLO), and in October 2000 I was co-organizer of an international workshop on 'Feast or famine' at KMRS. In recent years, I have organized a number of seminars at the Marine Biological Research Centre in Kerteminde. Together with the private firm BioConsult A/S I organized a workshop in May 2003 dealing with: 'Toxin accumulation in filter-feeding bivalves'. In April 2004, I organized a short course in marine biology within the framework of the University programme: 'First Generation in Science and Technology' for 15-16 years old pupils from 3 selected schools on Fyn. Here, the pupils made hands-on-experiments, collected plankton, recorded tidal water, and studied the adaptation of jellyfish to changing salinities etc. In October 2005, I organized a: 'Bivalve mini-symposium' in Kerteminde, and in April 2006 I organized an international mini-symposium: 'Marine bio-production and filter-feeding' in Kerteminde. Finally, it should be mentioned that I during 8 years, as part of the University of Southern Denmark's bridge-building programme, have organized and together with two of my students held a 4-days intensive marine biology course ('Efterårslaboratorium') in October for 16 upper-secondary school pupils from all parts of Denmark. Many of these highly motivated pupils have later on been enrolled as students of biology at the University.

ADMINISTRATIVE EXPERTISE AND MANAGEMENT EXPERIENCE:

I have had a number of administrative commitments and been a member of a range of committees. At the present I am Daily Leader of the Marine Biological Research Centre, and an appointed member of the Environmental Complaint Tribunal (Miljøklagenævnet), the Danish Ministry of the Environment (since 2001; extended in 2006 to 2010, and since 2007 also member of the new ECT Visitation Committee). Member of the steering committee for a granting programme in Biological Diversity (Biologisk Mangfold) under the Research Council of Norway (2004 - 2007). Member of Forum for Biology (Fagligt Forum for Biologi) set up by the Danish Ministry of Education (since 2005). Member of the organizing committee for the 14th Danish Researcher Meeting in Odense 23-25 January 2007. Member of working group set up by the Minister of Science (September 2007-February 2008) to work out the need of futures Danish marine-research vessels.

Some previous administrative positions held include: Institute Leader of the Biological Institute, University of Southern Denmark (one year rotation). Appointed member of the Pesticide Council (the Danish Ministry of the Environment). Member of the former Nordic College for Marine Biology. Member of different committees for evaluation of applications (Ph.D., Post Doc, Assoc. Professor, Full Professor, the degree of DSc).

EXPERTISE IN WORKING WITH THE COMMUNITY, AND IN RESEARCH AND DEVELOPMENT INFORMATION:

I have been employed as adviser (1984-1998) by a publishing firm GAD (Gads Forlag) within the field of natural science textbooks for advanced studies. During some 5 years, I have arranged a supplementary 3 days training course for about 20 newspaper journalists in "Environmental Journalism". I have many contacts and close collaboration among Danish environmental authorities, ministries, a few industrial firms, and a number of popular scientific journals for which I have written many articles. I have held many invited talks in local societies, clubs and schools, and I have been a member of the planning council for the Danish Public University (Folkeuniversitetet). I have written more than 30 debate articles in newspapers, and I have been interviewed on TV and radio many times over the years, mainly on research and actual environmental topics. I have started an international discussion about the peer-review system, and since 2000 I have been the Editor of a website MEPS Discussion Forum 2 for the World's leading marine ecological journal, Marine Ecology Progress Series.