



Bridging the divide between academia and practitioners: Training coastal zone managers

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Abstract

This article describes how on the MSc Coastal Zone Management (CZM) course a range of teaching strategies have been used to bridge the gap between academia and practice in order to develop students who are well equipped for the workplace. The content and delivery of the course has been guided by practitioners in the field, including placement host and employers, to ensure that skills development is embedded into the curriculum. Examples of best practices are discussed with the view to providing recommendations for postgraduate level courses requiring a fine balance of academic content and vocational relevance.

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1. Introduction

Coastal managers rarely manage the physical processes of the coast. Instead, they have become facilitators, project managers, consensus builders and even marketers for the coast, interacting with specialists and non-specialists from a wide range of disciplines and backgrounds. This challenging role requires the ability to communicate and interpret information from and for a variety of audiences together with general management abilities in costing, timing and running projects.

In the case of Coastal Zone Management (CZM), one of the most important skills to develop is the ability to communicate across the many groups involved in CZM. One of the most widely known divides is between academia and CZM practitioners. Traditionally, this divide continued to be reinforced by the inability of academics to communicate

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effectively to the practitioners largely due to inappropriate use of language (academic or scientific jargon), unnecessary depth of message and an incorrectly assumed scope of understanding [1,2]. Therefore, CZM students need to understand the challenges of communicating to different audiences in different ways. The role of a 'Masters' course must be to ensure students understand the science, realise the context and appreciate the importance of appropriate communication and messaging of that knowledge.

There has also been a tendency to focus on coastal management without sufficient emphasis on the reality that all coasts are typically parts of the economic system and that businesses drive much of the behaviour of those systems. It is a consistent feature of conferences and other meetings about coastal management that they are dominated by academics, employees of governmental and non-governmental organisations, and rarely by businesses. To carry out effective, sustainable coastal management, an understanding of how people and organisations behave and work is needed. For this reason, the MSc CZM course discussed here, *ab initio* included taught components provided from within the University Business School. Furthermore, links between the environmental aspects of the course and business were established outside the immediate boundaries of the course [3,4].

This paper discusses how the MSc CZM course at Bournemouth University in the UK has attempted to bridge the gap between the academic requirements of a Masters award and the development of skills and attributes necessary in training coastal zone managers. This was the first MSc in CZM within the UK to be developed and has been running successfully on an annual basis since 1992. In 1994, the Assessors' citation in awarding The British Petroleum Prize (BP) in Environmental Sciences and Management as part of The Partnership Awards said

The coastal zone management MSc is innovative with an emphasis on real problems and real issues. There is frequent use of real and conflicting data for the basis of studies with an emphasis on tight deadlines and business disciplines. There is a requirement for students to meet and debate with practitioners outside the university, most recently BP, Wimpey, National Trust and ABP.

Initially, this paper outlines the academic requirements at 'Masters' level, followed by consideration of the range of teaching strategies used to develop different skills and which can be used to help bridge the gap between academia and 'practice'.

Four examples which have been used on the MSc CZM to help develop student employability attributes and hence prepare them for the workplace are then provided. This includes the use of a site visit during the induction stage of the course to introduce the students to the variety and complexity of CZM-related issues, followed by an oil spill simulation exercise where students take on specific roles and must manage the situation as it evolves over an accelerated time line. The third example considers the management of coastal erosion, where students act as consultants to produce a management strategy for a local site. The final example discusses how portfolio work can encourage students to recognise the scope and challenges within CZM through the use of topical issues and practitioner involvement.

2. Postgraduate level training in CZM

While academic debates questioning the nature of 'postgraduateness' and post-graduate skills development continue to occur (beyond guidance from Credit Level

Descriptors) [5–7], the strong message from industry [8,9] is that students need to have experience of the workplace. In essence, students need appropriate skills to communicate across disciplinary and institutional boundaries in order to be effective in their careers. The Discipline Network in Higher Education: Coastal Sciences and Management (England & Wales) specifically identified the wide range of academic subject areas and skills relevant to Coastal Sciences and Management [10]. Perhaps, not surprisingly, communication skills appeared high on the skills list. But how can skills be defined as ‘masters level’ and how should they be embedded into Masters’ level curricula?

In the context of MSc CZM, the ‘worthiness’ of a Masters course can be achieved by a strong underpinning of science (or academic content) which is specialised and applicable to the workplace, i.e. it is vocational. According to UK’s Quality Assurance Agency (QAA) for Higher Education [11]:

Much of the study undertaken at Masters level will have been at, or informed by, the forefront of an academic or professional discipline. Students will have shown originality in the application of knowledge and they will understand how the boundaries of knowledge are advanced through research. They will be able to deal with complex issues both systematically and creatively, and they will show originality in tackling and solving problems.

If students are to gain the qualities needed for employment not only does the academic focus of the course have to be suitable, but also, transferable skills need to be developed beyond final year undergraduate level to ensure critical awareness, initiative in complex and unpredictable situations, originality and creativity, self-reflection and personal responsibility [11,12]. In delivery of the course it is important to ensure that these skills are not developed at the expense of developing the students’ knowledge at Master’s level. Compared to the students undergraduate studies, the level of knowledge is much deeper, more demanding, covered at a much faster pace with its focus being more practical and applied [6]. In addition, there is a greater expectation for students to work through material independently and more intensely in order to cover the breadth and depth of material.

Course ‘relevance’ to students is guided by two drivers:

- (i) The skills CZM students require need to be driven by an understanding of the workplace. Therefore, the curriculum needs to shift to reflect changes in the industry and the specifics of the workplace.
- (ii) The students need to gain a wide range of skills specific to CZM but which are broad enough for them to enter employment outside the coastal sector or to enter a career outside the remit of environmental management.

Typically, students on the MSc CZM come from specific focused disciplines such as Environmental Science, Geography, Geology, Biology, Marine Sciences or a similar discipline. The MSc course aims to increase their understanding and knowledge base in the broader context of integrated CZM. By raising their understanding in other areas and broadening their approach, the course helps to develop the skills which allow them to act as an interface between practitioners from a range of backgrounds. In addition, members of each cohort mutually benefit from sharing the wealth of experiences and different expertise they themselves bring to the course [13]. On completion of the course, students

have found employment with a wide range of organisations, for example, Environment Agency, Crown Estates, Maritime Coastguard Agency, Natural England, Sea Fisheries Committees, governmental organisations (e.g., DEFRA and DFID), local authorities, NGOs, businesses (e.g., Allen & York Ltd., Association of British Ports, British Marine Federation, CEMEX Marine UK, Halcrow, Hanson Aggregates, NPower Renewables and Wessex Water), research organisations both in the UK and overseas and some have gone onto further academic research.

3. Learning and teaching strategies

Units within Masters courses need to be constructed in such a way as to ensure the academic focus is applied, practically oriented and specialised yet interdisciplinary in approach and perspective. Transferable skills are ultimately what the employers want and need [9], hence vocational masters degrees must be focussed to provide the skills their students will need in the workplace. A wide range of different approaches (Table 1) are used to help develop these skills and at the same time developing the students' necessary academic underpinning.

3.1. *Involving CZM practitioners*

Vocational skills are considered critical to the training of CZM students. The MSc CZM benefited from the involvement of practitioners in the design of the course, including providing guidance on the academic content. Practitioners continue to contribute to the evolving course through engagement with regular reviews and more frequently through informal feedback during their engagement with the delivery of the course. Guest speakers are used to ensure that students are exposed to leaders in the field (both academic and practitioner). One unit of the course (Environmental Change—Case Studies) is predominately delivered by members of the Centre of Ecology and Hydrology (a government research station) who are active researchers in the field. Students are encouraged to attend relevant conferences such as the annual Coastal Futures conference held in London and local Coastal Forum meetings. This provides them the opportunity to network with practitioners in the field, be aware of emerging issues and also has the added bonus of reinforcing the relevance of the academic content of the course. This contact with CZM practitioners also provides opportunities for student work placements and helps to ensure the course continues to meet the needs of a changing market.

3.2. *Work-based learning*

A key component of the course is a work placement which is placed after the taught component of the course and within which students are expected to carry out a research project. The project provides an opportunity for students to apply theory to practice and for the development of original and creative work. The industrial placement which may be with organisations in the UK or overseas allows students to experience a work environment entailing management practices, technical issues, working relationships and organisational structures. Hence, they should be able to appreciate the inter-relationship of management, scientific and practical skills. In addition, they are able to gain direct experience of working within an organisation involved with coastal management and

Table 1
Range of strategies used in the delivery of MSc CZM

Involvement of CZM practitioners

- in-curriculum design, guidance with content and in regular review of the course
- delivery of full unit/module by practitioners
- guest speakers on the course
- on student site visits
- student attendance of CZM-related conferences
- student attendance of Coastal Forum meetings
- provision of student placement for work experience
- opportunities for conducting the research project
- in the role of external examiners

Work-based learning

- work placements
- research projects
- course work assignments

Problem-based learning

- use of 'live' issues
- use of 'live' databases
- hypothetical projects

Role play

- simulation exercises

Fieldwork

- both local and overseas integrated into delivery of programme
- staff-led and student-led
- potential part of placements and research project

Portfolio work

- including reflective logs as part of assessment

Staff development

- active involvement with research and consultancy in CZM
- attendance of conferences related to CZM
- membership of local and regional coastal Fora and other coastal networks

Assessment

- varied to develop a range of different employability attributes in addition to meeting the requirements of a Master level programme
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thereby also extend their network of contacts within CZM [14,15]. The list of organisations where students have been placed is akin to those organisations with which graduates of the programmes have found employment (previously discussed). Problems which have not been resolved during the placement period have been very rare and in those few situations it has been down to differences in individual personalities or mitigating circumstances. It is important to ensure both host organisation and students are aware of their respective responsibilities and these have been agreed from the outset. Resources including supervision time are an essential input from the host organisations and need to be clearly recognised.

In many cases, students have made significant contributions to the work of the placement organisation. The wide benefits gained from work placements is supported by a number of studies [16–18], including one conducted by Ballinger and Lalwani [19] specifically focused on internships in Marine Policy and Integrated Coastal Management. As part of this international study, all universities involved (including Bournemouth University) reported that student feedback regarding the internship programme as being highly positive. It was also found in some instances that on completion of their course, some students returned to the placement host as full employees. Where, this has not been the case, typically the host organisations have provided highly valued employment references. Manns [18] also found in her study that potential employers benefited over the long term from the placement experience gained by the students.

3.3. *Problem-based learning including role play*

For our CZM students to enter a competitive job market and begin to undertake such a complex role on completion of the course, there is a need to ensure that their people-management skills are developed. Interactive group work, using problem-based learning lends itself to the task of training to produce independent learners [20] and practitioners [21]. ‘Live’ issues and the involvement of relevant practitioners ensure a highly motivated environment where students can build their skills through fact finding (workshop facilitation, interviewing, literature searching), group work and role-play and report (oral and written). Students learn by ‘doing’ in projects which are either ‘live’ or simulated, hence deepen their understanding together with their knowledge base [22]. These projects are designed to develop the sense of ‘reality and relevance’ and help enhance employability attributes, i.e., teamwork, problem solving and appropriate writing style [9].

3.4. *Fieldwork and site visits*

Field-based studies have always been designed into the course with three key objectives:

- (i) to provide an opportunity for students to investigate specific CZM issues at site level;
- (ii) to undertake these investigations not only in a UK context but also in an overseas location where issues of differences of culture, law, economy and language need to be managed; and
- (iii) to provide opportunities to meet practitioners on their own ground.

Fieldwork-based activities provide an opportunity for the students to see true life situations for themselves and to acquire practical skills. The academic literature supports

fieldwork as a way of enhancing the student learning experience [23–26] covering not only subject specific but also transferable skills. Students are able to see for themselves the complicity of real-world situations and the application of a range of different disciplines in context [27].

3.5. *Portfolio*

In recent years, it has become acknowledged that the use of reflective logs as part of a portfolio enables students to reflect on their learning and skills development [28–31].

Portfolios have proved to be a very useful learning and assessment tool for Masters students, not least because the students come from such varied disciplinary backgrounds. As the students are required to reflect on their learning within their logs—from lectures, seminars and through their own personal research, they inevitably draw on their background knowledge and their own experiences. At Masters level, the portfolio allows students to engage with unit issues in a way that encourages them to draw on existing knowledge and experience in order to appreciate different viewpoints and expertise and understand the importance of cultural and spatial differences. A portfolio can serve to bring group projects together while enabling the student to reflect more personally on the issues and learning challenges encountered on the way. The reflective logs are also useful for skills development. Many of the students on this course come from science-oriented backgrounds and find qualitative writing very difficult. The process of self-reflection is also alien to many science-based courses.

3.6. *Staff development*

Appropriate skills development is enhanced by the inclusion of teaching staff with industry experience and their active involvement in CZM-related research and consultancy [6]. Staff involvement and membership of local and regional coastal Fora and other coastal networks ensure advances in the field are reflected in the programme. This also fosters an environment in which staff are able to develop close links with practitioners and local projects thereby increasing the opportunities of bringing in live projects into the taught curriculum. Staff development is essential to ensure that theory is not taught in isolation and the use of real examples and case studies are fully embedded into the programme. This is also fundamental in breaking down divisions between academia and industry, together with providing appropriate training for the practitioners of the future.

3.7. *Assessment*

All taught units are constructed to enhance the abilities of the students to further develop their skills. For example, many assignments and fieldwork activities require group work or collaboration among peers. The mode of assessment is varied to ensure communication is developed in the written, visual and oral form. Examples of the types of outputs include reports, fieldwork-based assessments, group oral presentations, portfolios, and computer-based GIS exercises.

Assessments need to be viewed as a learning opportunity. It is important that not only do the assessments meet the academic requirements at Masters level but are reflective of tasks and outputs required in the work place. It is also important that the assessment tasks

help motivate the students (i.e., through involvement with real live case-studies) and that they are able to learn from both staff feedback and their own ability to reflect and review their progress [32].

4. Specific examples

4.1. Site visit to Dibden bay

As part of the induction to the local area and to issues within CZM, students at the start of the course are taken on site visits. One example of this is Dibden Bay in Southern England where AB Ports proposed to develop a six-berth container terminal. Although this controversial scheme was finally turned down, the arguments which were finely balanced have lost none of their impact and provide a backdrop to integrating theory with practice. It allows staff the opportunity to introduce planning law and harbour revision orders, which can at a later stage be more fully developed. Policy and legislation are important aspects of integrated CZM and need to be delivered in a manner which is not dry and turgid. Hence, the use of case studies such as this which help contextualise is essential, for students to think in an integrating and lateral manner and not simply compartmentalise each topic they are taught. By providing the opportunity for students to physically see and ‘experience’ the site for themselves, they are often more engaged with the issues. With Dibden Bay, the issues are wide and include

- (i) A strong economic case for the development based on
 - early port of call along the channel,
 - good rail link possibilities,
 - nearby access to the motorway network,
 - local skills, and
 - resulting cheaper goods.
- (ii) Significant conservation arguments against
 - proximity to the New Forest National Park,
 - height of proposed cranes and light pollution, highly visible from a wide distance (e.g., parts of Winchester 12 miles north),
 - habitat for wading birds, and
 - construction phase would have been highly intrusive to the nearby marina with its wealthy occupants.

The students can form their own opinion and argument still emerges both ways. A walk round the Marina follows when questions of tenure and organisation can be posed. Who pays for the lock gates which give access to the sea? Are the properties owned or leased? Or both? The huge fish in the marina—are they a sign of good water quality?

Field visits of this sort can present issues vividly. Students are encouraged to observe, evaluate and consider.

4.2. Role play—simulation exercise

Within the ‘Aquatic Pollution and Contingency Planning’ unit, a simulated event to develop academic knowledge and practical skills is utilised. To inject realism into an

operational issue such as contingency planning, it was considered beneficial for students to become actively involved in a simulated emergency oil-spill event. Emergency planning is particularly relevant to students studying CZM. There are a number of potential hazards at the coast including landslide, flood, oil spill and terrorist attack to name a few. Within lectures, the students discuss the academic context for contingency planning before preparation for the simulated event commences. The simulated event itself is a day in length and is held in the emergency planning office of Dorset County Council as if it were a live event.

The oil-spill event is simulated to affect the Dorset coast, which holds multiple (conservation) designations including its recent recognition as a World Heritage Site, as well as the busy ship-to-ship transfer zone in Lyme Bay. Dorset County Council already has a detailed oil spill contingency plan and an emergency response for oil pollution incidents. The simulated exercise with students offers the Council an opportunity to refine their training courses for emergency planning officers and hence there is mutual benefit in the exercise being undertaken.

The strengths of the exercise include

- (i) Realism of the event—students have to think on their feet, work as a team, communicate with other teams (across the disciplinary divide), continually synthesis new information and disseminate it to relevant departments in an unpredictable and high-pressure-high stress situation,
- (ii) Student interaction—students must work with each other, their tutors and the council officers, and
- (iii) Learning by doing—improving knowledge in the area of emergency planning and skills which are transferable.

The main weakness of the exercise is that planning for each year's activity is time consuming for staff and involved practitioners. A number of staff are also involved throughout the activity.

Students and tutors involved in the simulated exercise are consistently enthusiastic. 'It is fun, hard work and a huge learning curve'. Practitioners are involved at all stages and together with the lead tutor, the practitioner refines the procedure each year.

Student feedback via unit evaluation forms over a number of years includes comments specific to this activity. The students see the simulated event as a challenge and hence, an extremely useful learning experience.

4.3. *Problem-based learning—Studland Bay*

As a result of concerns about damage to their coast protection structures and the risk to beach huts from coastal erosion, the National Trust (NT) at Studland, Dorset, suggested that the MSc CZM students could help them develop their management strategy for the site. The question for the National Trust was what action should be taken? The Trust commissioned from the University (with the expectation that this would be carried out by the MSc cohort under supervision of the course team) a study of the erosion of the dunes and beach.

The report confirmed the rapidity of erosion and showed that if the combination of normal erosion and the more devastating effects of infrequent easterly storms continued

then the main line of beach huts would be threatened within a few years and that the long-term (25-year) scenario was the probable loss of a toilet block and a growing threat to the information centre and cafe. A benefit–cost assessment was produced, based on a number of retreat scenarios.

The NT management plan for the site took account of the findings when it was revised. One of the CZM students then worked with the NT on placement and developed the change scenarios in more detail.

In the following year, one potential solution was seen as the construction of an artificial dune. The cohort was asked to design, cost and prepare a project management plan for this. On the basis of the report, the NT formally proposed this action.

Due to the timescales over which decisions were being made, this element of the project was used in 2 consecutive years, the second cohort being asked to include an interpretation display which would explain the proposal to the public and elicit their responses. As part of the course assessment, the NT Estate Manager reviewed all of the interpretation displays. His view was that they were of sufficient quality that they should be displayed on site throughout the summer. Although public display carried no formal marks, there could hardly be a better judgement about the practical value of the exercise than for the students' work to be used publicly as a basis for management of the site. In subsequent years, a detailed study of the potential sources of sand for the artificial dune was carried out.

The project had several phases as the National Trust reacted to changing circumstances and each consecutive cohort of the MSc course was faced with a new scenario. The project provided a real and continuing problem which students tackled as a professional task. They knew that their results could be used by the National Trust. They were able to review previous results in the light of the decisions actually made by the landowner and so carry out project evaluation. The work carried out within this practice-based project directly influenced policy for the management of the site.

4.4. *Portfolio work—including reflective logs*

Within the Law and CZM in Practice unit, a key component of the assessment is a portfolio. The aim of this unit is to encourage students to recognise the scope of CZM issues and the challenge this creates for managers of the coast today. To do this, the unit is kept topical and includes active practitioner involvement. For the 2004–2005 cohort, the unit included a series of lectures/seminars on coastal law and contemporary coastal management issues, e.g., shoreline management plans, partnership in coastal management, public participation and the assessment focused on two project issues developed with the practitioners. The project issues required students to work in small groups, researching the topics from chosen viewpoints, e.g., Local Authority or English Nature, etc., and presenting findings through posters and a group presentation. The practitioners were involved in these projects, taking part in active workshops in order to put the topics into context. While students worked on these issues, they were encouraged to use a reflective diary on a regular basis. Whilst the group work reflected the professional position of their chosen coastal interest group (as assigned in class), the log entries were a personal assessment of the issues.

Students were given tips to help them begin the process of reflection:

- Preliminary thoughts might be triggered by a first reflection on your ultimate goal, i.e., to understand the nature of practical CZM.

- As the projects progress you can write a personal description of your journey towards this goal.
- You will list the books/journals/articles you read and discuss your project experiences.
- It is important to consider what the articles have told you, what your doubts, worries and moments of enlightenment are.

Students were also encouraged to bring elements of the unit together, i.e., issues raised in all lectures/seminars and linking the law component to general CZM issues. The students were also pushed to see how all units of the course fitted together.

5. Conclusions

This paper discusses a range of strategies which can be employed to equip students for the workplace. It is important that the skills required by employers are clearly embedded within the curriculum. CZM must be taught using real life examples, case studies, field sites and fully involve practitioners. The involvement of practitioners through projects/exercises is enormously beneficial to the course as it enables an injection of realism to the subject. Moreover, collaborations such as these often lead to the unexpected bonus of a better working relationship and understanding between practitioners and academic environment. A mutually beneficial relationship has also been seen in the examples given here and other elements of the course where students undertake short projects or fieldwork to the benefit of their own academic development whilst providing useful information/knowledge to the involved practitioners. The building of good working relationships with practitioners also develops the opportunities for good student placements and potentially for postgraduate employment.

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