

## **Research in Maritime Institutes**

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### **ABSTRACT**

Increasingly maritime institutions are seeing the benefit of research programs that underpin their education and training programs. Research can be conducted for its own end, but is far more beneficial to an institution when it informs and supports the teaching.

Maritime research can take two main forms: subject based research into specific maritime issues, e.g. Ship safety, or, pedagogic research into the ways of delivering educational and training material, e.g. distance learning packages. As well as helping the teaching programme, research can be seen as a development activity, benefiting individual teaching staff.

Developing research strategies in existing maritime institutions can present economic and cultural problems. This paper will present various models for developing research programs in maritime institutions.

### **1. Introduction**

In recent years there has been a dramatic change in the attitude and approach of Maritime Institutions towards “Research” and “Scholarship”. For a variety of reasons Maritime Institutions are showing more interest in getting involved in these areas. For some, it is a matter of potential extra funds associated with these activities, and for some others it is from the viewpoint of prestige. In HE sector as a whole and in very general terms research and other scholarly activities are seen to firstly underpin and support the teaching programmes which takes place. Secondly to provide expertise to support the relevant industries, and finally to push forward the scientific barriers in different disciplines.

Academic staff have also been under pressure to pursue research and scholarly activities for different reasons. Some Institutions have made it very clear that “tenure” and “promotion” is directly linked with research output particularly publications in reputable journals, with conference presentation having lesser value.

Research and Scholarship are important and necessary elements of academic life, which need to be integrated and embedded into the daily work of all academics. The industry (MET) has progressed from those days that academics could lecture from their notes which at times were (possibly are) out of date and not relevant to the current practices. Academics must at least be familiar with latest development in their subject area, and ideally involved with the latest development both scientific and industrial.

To set the scene we distinguish between two types of Maritime Institution here at the outset. Firstly we identify a group of large Maritime Academies/Universities which are either wholly dedicated to maritime work, or a major part of their activities are maritime related. These Institutions mainly provide “long courses” such as BSc and MSc degrees, as well as other ancillary and related training programs supporting the STCW requirements. The second group is smaller and more focussed Maritime Training Centres, which specialise in one or more maritime related subject area and provide short courses in support of the shipping industry. There are of course other Institutions (like Southampton Institute in UK) which provide a mix of these and provide both long and short courses either as part of the same department or in a more structured manner under different departments.

Experience has shown that Maritime Universities have the capability of undertaking a much wider range of research programmes and topics. These include both subject (or discipline) related research, e.g. research into the next generation of navigation systems, or pedagogic research to establish new and more innovative means of student learning. The second category which are the smaller Training Centre are best suited to conduct “applied research”, where involvement and co-operation from the industry is an important element.

## 2. Need for a Strategic and Co-ordinated Approach

Most Maritime Institutes either have a research programme or in the process of developing one. For these activities to be successful it is essential and necessary to be properly co-ordinated and part of the strategic plan of the Institution. To ensure success it is suggested that there are two closely related elements, which should be covered under the strategic plan for Research and Scholarship. Firstly is the role of “Leadership” in research, and secondly the “Human Resource” element

- 2.1 Leadership: This by far is the most important element and if not exercised properly, the activity will either fail or level of success will be disappointing. Leadership is seen here as all activities, which create the suitable atmosphere and environment, leading to successful achievement of goals and objectives. This must be at the highest level of the management where decisions regarding strategic direction of the Institute, policies, and staffing and other resources are made. There are of course different styles of leadership, and the most successful one that we have observed is the “open and consultative” approach, which will give the ownership of the activity to everyone involved.
- 2.2 Human Resource (or the people issue): The actual research and consultancy is usually undertaken by academic and research staff, and it is important to have a well planned “staff development” programme which will support the staff in having the required expertise in subject area. Staff workload should be considered and designed very carefully, giving academics enough time to be able to undertake the research and other scholarly work related to their subject area.

It is suggested here that the Maritime Institutes need to develop a “Research Strategy” if they already have not got one. This will involve the normal process of looking inwards to assess the capability and identify areas requiring enhancement, as well as looking externally to identify what else is happening which may have an impact on research (SWOT analysis).

Following are extracts from the Research and Scholarship strategy[1], which was developed at Southampton Institute about a year ago and took about 12 months to develop:

### ***The Strategy***

*The development of the current research and scholarship strategy builds on the previous work of Research Committee. There has been consultation and debate, which has led to agreement on what, is meant by research and scholarship in this Institute, together with the principles, which form the basis of this strategy.*

*The development of the strategy has, therefore, taken account of:*

- *Changes in the national environment*
- *the Institute-wide consultation for a new strategic plan*
- *faculty and service plans*
- *the current position and recent progress*
- *the survey of research activity, November 1998*
- *deliberations of the Research Committee*

### ***Scholarship***

*The Institute’s academic community espouses the notion of scholarship as the prime characteristic of its membership. Scholarship comprises all forms of academic achievement and includes any activity which results in the acquisition and advancement of knowledge, erudition and learning. This means, inter alia: the conduct of original research in subject areas related to the curriculum; the necessary learning required to present material representing the current state of the art; the pursuit of excellence in teaching and learning; and the analysis of material and reconstitution at various levels appropriate to taught courses. In short, the Institute has adopted a modified version of the Boyer [2] notions of the integration of the scholarships of discovery, integration, application, and teaching. This inclusive definition values all aspects of scholarship.*

#### ***The role of subject research***

*The academic staff of the Institute are a reservoir of subject expertise. The Institute has a vocational academic mission and ergo needs its academic community to maintain a strong and appropriate subject research profile in*

order to properly reflect the expectations of society. The expectations of a higher education institution are that it can provide up to date knowledge of a specialised nature, which will extend the intellectual capacity of its students and educate them in such techniques as will fit them for problem solving in the modern world.

Subject research is pivotal in creating the necessary conditions and the Institute expects its academic community to acquire new knowledge through the conduct of research projects funded by public bodies both national and trans-national and by industrial sponsorship. Excellence in subject research is evidenced by the publication or production of: refereed journal papers; books; chapters in books or edited volumes; refereed conference papers; exhibitions; works of art; designs; patents; and other output. Outputs are appropriate to the disciplines of the Institute.

### **The role of pedagogic research**

The prime purpose of the Institute is the provision of Higher Education. To ensure that teaching and learning are delivered effectively it is important that all staff involved in teaching are engaged in: reflection on; development of; and enquiry into the pedagogic process. This strategy envisages that research into the techniques and methods relating to teaching and learning shall be ubiquitous. Pedagogic research is synonymous with contributions to the academic professional knowledge corpus. The Institute expects that its academic staff will: draw on this corpus; be informed about national and international developments; and be active in pedagogy.

### **Key Aims and objectives**

- The Institute aims to provide opportunities for its staff to be involved in research and scholarship of national and international standing which leads to the enhancement of learning and teaching.
- The strategy is intended to enable the achievement of the Institute's aim of ensuring its future as an independent institution of high standing, and its objective of gaining powers to award both taught and research degrees.
- The research and scholarship strategy is central to achieving these aims. The issue of scholarship covers all aspects of academic competence. It includes research and the necessary subject and pedagogic excellence required to underpin and support postgraduate programmes and honours components of undergraduate programmes.

The objectives that are designed to support the aims are:

- To ensure that the Institute sustains a level of funding and a rigorous process which will maintain a research student population that is at least that required by the Quality Assurance Agency and of peer expectation.
- To ensure that staff contribute fully to the enhancement of student learning and specifically of research degree supervision. This contribution is to be based on sustained scholarship.
- To ensure that staff have an opportunity to enhance their knowledge through subject research and their reflective and presentational powers through research into pedagogy.
- To ensure that in the context of research, faculties and services work effectively together, having regard to equal opportunities and enabling research expertise to contribute, where possible, to the geographic region and the community of the City of Southampton.

### **Implementation**

The Institute will, through the work of its Research and Graduate Studies Committees, the ADS the Research Office of the Academic Quality Service and the Research Centres:

- advise staff and students of the Institute's priorities for research and scholarship
- encourage research which is focused, selective and which builds upon the expertise within the faculties
- value and encourage discipline-based research and pedagogic research
- encourage collaborative research on an inter-faculty or inter-institutional basis
- recognise and promote significant achievements in research and scholarship
- seek to enhance the research environment and infrastructure
- promote the effective management of resources allocated to research and scholarship
- seek to enhance the external profile and reputation of its research and its researchers

Faculty strategies will be consistent with Institute priorities for research and scholarship, and will build upon the particular strengths within the academic areas.

*Faculties will:*

- *develop their own strategy, consistent with the Institute's strategy, including the strategy to develop additional income streams, and demonstrating support of other faculty activities*
- *with the approval of the Faculty Board, submit their strategy for approval by the Research and Scholarship Committee*
- *produce an annual plan for approval by the Research and Scholarship Committee, detailing proposed spend against internally-funded projects, individuals and teams, together with anticipated outputs*
- *be responsible for the monitoring and review of all research and scholarship in the faculty, and especially that which has attracted funding, either internal or external*
- *produce and submit to Research and Scholarship Committee an annual report of research and scholarship in the faculty*

*Consideration will be given to the research and scholarship undertaken within services, and the extent to which they will be expected to comply with the provisions of paragraph 28.*

*The Institute will:*

- *make substantial investment to stimulate and encourage research and scholarship in the faculties, to enhance the environment and to support an appropriate infrastructure*
- *support Research Centres within faculties, to provide areas of focus for research and to promote excellence*
- *expect staff to be annually accountable for their use of research and scholarly activity' time*
- *provide additional support to encourage team research*
- *operate programmes of seminars, publish internal papers at faculty level*
- *further develop collaborative, jointly funded ventures with industry*
- *seek to protect Intellectual Property Rights arising from research and scholarship*
- *seek to exploit the commercial potential arising from research and scholarship*

### **3. Ethos and Rational**

The purpose and rational for undertaking research must be clearly defined and agreed with close consultation with the academic staff. If the main reason for undertaking research is to underpin the teaching programme, then one must be able to link research programmes to different parts of curriculum.

It also suggested here that staff should be able to research into areas, which perhaps not directly related to curriculum, but have current interest from the industry. This will allow new teaching areas to be developed based on the research being undertaken.

If research is purely to support the industrial need then a close link with the industry is needed. This will enable the academics to have a good understanding of industry, and ideally to be able to predict their needs in terms training and consultancy ahead of the time.

### **4. Research Culture**

Research Culture includes all issues relating to the research environment and staff attitude towards research and scholarly activities. Institutes intending to embark on this road may face the challenge of developing a "research culture" and suitable "research environment" which is conducive for academic research, and will encourage and reward those who are pro-active in research.

### **5. Research Topics and Ideas**

One issue that most researchers and in particular the new blood is facing is how to start and what topics or subject area they should research into. This is a genuine and difficult issue to address. We believe that research area must be of interest to the "researcher", otherwise progress will be slow and difficult. We also believe that the subject must fit in with overall research direction and profile of the Institutions. External factors and availability of resources (e.g laboratory equipment, simulators etc) should be considered and present at the Institute and accessible to the researcher. When looking externally for subject areas, academic networks and technical journals can be used to identify areas with current interest, noting that some of the material published

in technical journals may be up to 2 years old, and results of research which may be even older. This is perhaps one area that IAMU can play a big role by providing support for those who are starting up, as well as finding international partners for those already engaged in research programmes.

## **6. Role of Different layers of the Institution**

In section 2 we gave a summary of a research strategy at Southampton Institute. Examining this in detail you will notice that there are responsibilities both at the Institutional level in terms of commitments from the Institute and faculties as well as on individuals in terms of contractual requirements for them to undertake research and participate in various activities.

Here we would like to reiterate what has been mentioned before that it is not just the researchers who are important but the leadership element of the Institution by providing support and guidelines.

## **7. Formation of a Centre or Unit**

A great danger for research activity is low visibility due to ignorance of its role, importance, and potential and significance. Ironically, its wide scope can also lead to difficulties in recruitment of students and staff, fragmentation of effort with several "isolated" groups working in parallel, possibly replicating results, using resources inefficiently, competing for such resources and presenting a confusing and unfocused picture to the outside world which, if it can detect activity at all, is likely to respond by taking its custom (research contracts etc.) elsewhere. Our experience show that formation of research clusters with the same subject-area interest will give higher visibility and more impetus to the research culture within an Institution. The purpose of such a Unit or Centre can be summarised as follows:

- 1) developing and increasing the visibility of a particular research area, such as Maritime Technology, as an academic teaching and research discipline involving ingredients of the related disciplines; (such as):
  - a) Ship Manoeuvring Analysis
  - b) Mathematical Modelling and Simulation of Marine Systems
  - c) Vessel Traffic Control
  - d) Marine Control Systems Design
- 2) providing impetus to research in the subject area and an ability to plan and co-ordinate effort and resources to the benefit of the discipline, the Institute's regional, national and international profile;
- 3) providing a focus for staff and students in the Institution to develop their expertise and contribute to the subject area;
- 4) to foster links with industry, research organisations, higher education institutions and the international R & D community and to act as a highly visible focal point of contact for such bodies in their contact with the Institution on this subject area.
- 5) to seek common funding from such external sources for equipment, research assistants and students;
- 6) to provide a framework for the development of short term industrial contract work to be carried out following normal Institute procedures;
- 7) to consider the development of short post experience and training courses for the industry;
- 8) to encourage staff members and research students to develop innovative ideas particularly those with industrial interest across a wide spectrum of the subject area.

In the initial development period the Centre may concentrate on increasing the academic activity and infrastructure in the subject area and increasing the profile of the Institution both nationally and internationally by attracting research students and research contracts.

It is also advisable for the Centre to have a steering committee composed of both internal and external (industrial) members to provide guidance in the strategic direction of the centre.

The activities of the Centre may be clustered around the central objectives of:

Developing a skill base relating to the subject area,

Undertaking Research, pure and applied, in all related areas, based on the resources and expertise available within the Centre,

Consultancy work in the areas of expertise of the Centre to be encouraged for members of the Centre. It is also expected that the interdisciplinary nature of the area will provide a platform for other staff members to carry out this type work possibly in collaboration with Centre members.

## **8. References**

- (1) Southampton Institute (2000), "Research and Scholarship Strategy Document", Southampton, UK.
- (2) Boyer E. L., (1990), Scholarship Reconsidered: Priorities of Professoriate, Princeton, N.J., USA.