

The Royal Institution of Naval Architects

Education & Professional Development of Engineers in the Maritime Industry



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Engineers in the Marine Industry

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DAY 1 PAPERS:

09.00-09.30

COFFEE & REGISTRATION

KEYNOTE Prof. Han, KAIST, Korea

PROBLEMS ENCOUNTERED BY THE STUDENTS IN THE IMPLEMENTATION OF OUTCOMES-BASED EDUCATION AT THE MARITIME ACADEMY OF ASIA AND THE PACIFIC
 Analizabeth R. Punongbayan, Maritime Academy of Asia and the Pacific
 With the introduction of Outcomes-Based Education (OBE) in the Philippines, a number of educational institutions have implemented OBE as early as 2009 but there is a dearth of reports on the problems met by either the teacher or students in the schools where OBE was initially implemented. The purpose of this study is to gather and document the problems encountered by the students of the Maritime Academy of Asia and the Pacific (MAAP) during the first implementation of OBE in the First semester of School Year 2013-2014. In this descriptive research, 702 students taking Bachelor of Science in Marine Transportation (BSMT) and Bachelor of Science in Marine Engineering (BSMarE) identified the problems they encountered as Assessment, Teaching, Technology, Time, Teacher and Lesson Pacing-Related Problems given in a questionnaire. Furthermore, the data analysis showed that students during the initial OBE implementation agreed or strongly agreed on the following: Better for the instructor to take over the report; The students are not certain which part of the students' report will be included in the teacher prepared examination if there are any; Students' access time to computers is limited; They (students) do not own their time; and Teacher just watch and listen during the class. The researcher recommends that these problems be looked into for necessary adjustments or policy modifications. Problems must not deter OBE implementers; rather, they should become openings for opportunities to improve the quality of education.

10.45-11.15

COFFEE

GLOBALIZATION AND ITS EFFECTS ON MARITIME EDUCATION AND TRAINING

Arun Kr Dev, Newcastle University (Singapore), Singapore

Globalization has changed the world in many ways, and education has not been able to remain untouched in that process. The day is no more like before that every student has to go to the Campus of an overseas university. The overseas university campus can be in the country where the student resides. Similarly, many more academic institutes have grown in almost all developing and under developed countries in South and South East Asia most. These changes have also affected maritime education in all levels like quality of learning and teaching, quality of students' background, quality of teachers, quality of resources, etc. Even the quality of the accreditation process may be questionable. According to the Author's experiences in the industry, academe and in professional organizations, there has been an overall downgrade of maritime education and training especially in developing and underdeveloped countries. It is time that certain check and balance be introduced in this vital education and training of the maritime world before it is too late.

ACADEMIC CURRICULA BASED ON INDUSTRIAL REQUISITES

Sanmitra Guha, INDIAN MARITIME UNIVERSITY, India

The major fields in maritime sector are marine engineering, offshore engineering, dredging- harbouring and ship design. In relation to these ,employments are mainly found in shipyards, shipping companies, ports etc .So if there are graduate and post graduate courses specifically in these fields, it would not be problem to look for employments for e.g B.Tech in marine engineering, B.Tech in naval architecture or dredging and harbouring .Previously it was a trend to divert to marine sector after doing graduate in core engineering branches but now with awareness in this field institutes are offering the above mentioned courses and students are also showing interest in taking up these courses. Now ,the institutes should mould their curriculum in such a way that students after passing out become well-built professionals to be readily accepted in the marine sector. The institutes should have-

- To gain practical knowledge, compulsory training courses should be there in marine companies, shipyards and ports for all students along with proper facilities and stipends. But it should be initiative of the institute.
- Incorporate sectors managerial posts are designated to a graduate employee from an engineering background so institutes should have compulsory management courses in the syllabi.
- Workshop technological labs with welding equipments, lathe machines should be there for training students.
- Students should be encouraged to construct small scale models.
- Compulsory software trainings to get employments in marine design sectors.
- Free visit to shipyards and ports.

This in brief the basic initiatives or modifications the institutions should make in their academic curricula to befit industrial requisites.

12.25-13.25

LUNCH

'WORKSHOP AND LABORATORY PRACTICES IN NAVAL ARCHITECTURE AND SHIPBUILDING ACADEMIC CURRICULUM': TEACHING ENHANCEMENT USING IN-HOUSE MODELS AND SHIPYARD INTERNSHIP PROGRAMMES'

Dr. K Sivaprasad, Associate Professor , Dept. of Ship Technology, Cochin University of Science and Technology, India

Dr. Ajay Asok, International Association of Ship Classification Societies, London

Mr. Vipin Vijayn Surveyor, American Bureau of Shipping, Singapore

Naval Architecture and Shipbuilding education is characterised by the interdisciplinary nature of its academic and practical content. It even incorporates various disciplines such as architecture, astronomy, logistics management, legal studies and economics, besides the fundamental engineering, technology and basic science topics. Naval Architecture and Shipbuilding is one of the oldest branches in engineering and it has contributed to the development of human civilization substantially. Due to its interdisciplinary and massive nature of the practical outcome, ie, ship as a product, there are some practical difficulties in implementing workshop and laboratory practices undertaken as part of the undergraduate academic curriculum. This paper proposes solutions to these issues using enhanced teaching methods with the help of ship models and mock-up and effective utilization of internship programmes attached to ship and boat yards. Case studies associated with the proposed study models undertaken in Department of Ship Technology, Cochin University of Science and Technology, India are also presented as part of the paper.

USE OF VIRTUAL LEARNING ENVIRONMENT AND CLOUD COMPUTING SYSTEMS IN MARITIME EDUCATION AND TRAINING: ISSUES AND CHALLENGES

Iman Fiqrie B Muhammad, Modular, Offshore and Safety Training Department

Wilfredo Erenio Yutuc, Advanced Marine Engineering Department

Malaysian Maritime Academy (ALAM)

Among the many innovative e-learning technologies in use today which are intended for teaching, learning enhancement and convenience - the virtual learning environment (VLE) and cloud computing system (CCS) may be worthy of serious consideration in developing a new andragogical framework in Maritime Education and Training (MET). With the maritime industry's mindset focused on competency development of shipboard personnel through practical training, the value of such systems may not be fully understood and may be overshadowed by the fact that it may be provided free of charge and thus thought to be of little value. But considering its many features and available applications, it may indeed be an effective tool to help achieve the numerous goals and meet the expected learning outcomes in MET. It also brings the advantage of exposing the students to a higher level of computing skills that can be transferred directly to new technologies used in the maritime and shipping industry plus the benefit of providing instruction in a flexible manner with varying time and location autonomies.

This paper presented the barriers associated with the implementation on the use of VLE and CCS in MET and the suggested solutions.

Key words: Cloud computing system; E-learning; Maritime education and training; Virtual learning environment

THE E-LAB PROJECT AT UCL

Ema Muk-Pavic, Lucy Collins, UCL, UK

The current emphasis in education is the use of e-learning and online tools. This provides an additional teaching environment and the opportunity to increase the variety of activities used to achieve learning outcomes. With this in mind, a new learning resource called 'E-Lab' was developed and introduced to the ship hydrodynamics module of the Naval Architecture MSc Programme at UCL. 'E-Lab' stands for 'Electronic-Laboratory' as it uses web-based material to educate students on, and guide them through, a practical experiment using UCL's Towing Tank Facilities.

The primary aim was two-fold: First, to investigate the advantages and practicality of using E-delivery and specifically, how UCL's online resource 'Moodle' could be better utilised. Second, it was an opportunity to improve practical knowledge and experience, something that has seen to be lacking on current postgraduate courses.

As a secondary aim, using e-delivery for a practical experiment introduced a social constructivist and situative learning perspective, where students develop their identity working in a group and actively learn new ideas through collaborative activities and dialogue. Although the Moodle site steers student learning, the experience for the students is one of self-learning and learning together, which is highly conducive to group work and open discussions of the topic.

This paper outlines the format of E-Lab, the aims and objectives of its implementation, discusses the changes in the approach to learning and teaching that such resources may bring, before presenting the results of the E-lab trial and assessing the successes and failures of the project.

16.15-

GENERAL DISCUSSION & DRINKS RECEPTION

CONFERENCE OF ENGINEERS IN THE MARINE INDUSTRY

4, BUSAN, KOREA

DAY 2 PAPERS:

09.00-09.30

COFFEE & REGISTRATION

MECHANISMS FOR ENSURING THAT EDUCATION PROVIDERS ARE RESPONSIVE TO INDUSTRY REQUIREMENTS

Ariit Sengupta, Deepak Kumar, Indian Maritime University, Visakhapatnam Campus

Importance of the role of shipping and ships can be appreciated from the fact that ships transport about 95% of world's cargo. As students of Naval Architecture one must be aware of the practical implications one's design has on the Industry and this doesn't mean only technical suitability of the vessel but also economic viability and habitability. Alas! The students in their course of study remain more or less aloof from economic and aesthetic factors. The main cause of this is no or very less Industry-Institute interaction. Better interaction between Technical institutions and industry is the need of the hour. In the present scenario if a graduate is employed he has to be trained for the first six months in the industry, this causes loss of man hours. If the industry collaborates with the university and trains the students in the final year this would save precious time of the industry and it would get customized employees right out of college. There is a pressing need to have a curriculum in institutes catering directly to the industry needs. This will be advantageous to the industry in a way that the industry will have a workforce already aware about the modus operandi; cutting down the expenditure on training. To the students it will result in better employability. In our main paper we intend to look at various curriculums followed around the world with an emphasis on facts and citing few examples we will suggest some solutions so that Industry can be brought as a force in curriculum development, so as to fulfil the demands of the global shipping market.

KEYWORDS: Shipping, Industry-Institute Interaction, Aesthetic Factors, Curriculum, Economy.

GAMEPLAY APPROACH TO VIRTUAL DESIGN OF GENERAL ARRANGEMENT AND USER TESTING

Markus Ahola, Aalto University, Finland

In this paper we present a new approach to general arrangement design using a novel virtual reality tool developed in Aalto University. The software platform combines elements from 3D modeling, virtual reality, user testing, and gameplay.

The tool enhances the understanding of the consequences of design decisions by providing the designer the ability to observe and conceive ship interiors in real-world scale instead of the limited scale available through a traditional computer screen or a projector. Secondly, the software enables new way of straightforward user testing, in which the designer can actively communicate with the user exploring the virtual ship model. In addition to observing users actions in real time, user behaviour can be recorded systematically for later analysis and repeatability.

The tool is realized as a portable system containing an Oculus Rift headset, a console game controller and custom-made game software enabling importing and manipulating of different CAD formats. The tool is progressively being developed further, with aim to support educational and decision-making processes.

10.45-11.15

COFFEE

TEACHING SEAKEEPING FOR SHIPS AND OFFSHORE STRUCTURES: A DELICATE BALANCE

Arun Kr Dev, Newcastle University (Singapore), Singapore

Seakeeping is traditionally taught for Naval Architecture using mainly ships as examples. Many books are also available in a similar way citing ships as examples. However, in order to cater for students in offshore or Ocean Engineering, a paradigm shift is inevitable. The author teaches Seakeeping Part of the Module Marine Dynamics for Stage 2 students of both streams: Naval Architecture and Offshore Engineering. The available hours are limited, and within this span of time the students of both streams have to be taught basic seakeeping aspects citing examples of both ships and offshore structures. This is rather a challenge. As the same group of students study another Module Marine and Offshore Mechanics, a delicate balance need to be maintained so that both groups of students can have equal understanding of the subsequent module with ease and comfort. The author has now done it for last 5 years and according to him, most of the students finally manage to understand the module quite well. The author thinks that teaching and learning in Stage 2 has been the root of the final success.

12.25-13.25

LUNCH

SKILLS AND ASSESSMENT NECESSARY IN A CO-OPERATIVE EDUCATION MARITIME ENGINEERING PROGRAM

Dave Harte, Mark Symes, Australian Maritime College, University of Tasmania

A challenge that academia face is providing a seamless transition from undergraduate to professional engineer. Co-operative education (co-op) programs endeavour to bridge this divide by ensuring undergraduates experience current industry practices and procedures throughout their undergraduate program, confirming co-op graduates ability to 'hit the ground running' upon completion of their undergraduate studies. Success of the co-op type program as a form of Work Integrated Learning (WIL) is reliant on structured and authentic assessment aligned with industry, enabling the development of industry perceived skill sets. The challenge exists to ensure this is maintained within work placements which occur outside the academic institute while still being aligned to the expectations of the academic process. This paper investigates the processes utilised within the National Centre for Maritime Engineering at the Australian Maritime College.

PARA-PROFESSIONAL ENGINEERING PATHWAYS FOR MARITIME ENGINEERING

Mark Symes¹, Dave Harte¹ and Giles Thomas¹, Dayna Broun²
Australian Maritime College¹, University of Tasmania², Australia

The Australian Maritime College (AMC) has embarked upon the development of an Associate Degree in Naval Architecture in order to fulfil the industry need for naval architect associates. This paper sets out the development and implementation of an Associate Degree in Naval Architecture for the Australian industry. Recent reports have described skills shortage in all occupational levels in the maritime industry from tradespeople to engineering paraprofessionals and professionals. Traditionally the primary educational activity in Australian Universities' engineering schools is the education of four-year Bachelor of Engineering graduates to enter practice as Professional Engineers. There are several activities that can address engineer shortages, for example developing engineering pathways for non-traditional entrants into degree programmes, increased support for studying students, and increasing the participation of under-represented groups. This paper describes some of the key features of the engineering pathway program offered at the Australian Maritime College, in particular the two year Associate Degree in Engineering (Naval Architecture) in addressing the perceived shortages in Para-professional in the maritime sector.

CONFERENCE DETAILS

This 4th International Conference on the Education and Professional Development of Engineers in the Maritime Industry will build on the success of the previous three conferences in 2011, 2012 and 2013, and again bring together representatives of both industry and academia to present and discuss how those engineers of the future who will be the key to the future success of industry will achieve the knowledge, understanding and professional skills which industry needs, both today and in the future. The conference will compare the differences in the requirement and delivery of education, training and professional development in different sectors of the industry and in different countries, seeking to both learn and benefit from such differences. Given the lead time to provide professional engineers, the conference will seek to identify the changes needed now to provide the engineers of the future.

