Paper for Consideration by CBSC14

E-learning potential for hydrographic capacity building

Submitted by:	IMarEST
Executive Summary:	This paper aims to present the benefits of e-learning for the purposes of supporting capacity building in the hydrographic community.
Related Documents:	IHO Capacity Building Strategy
Related Projects:	2016-CBWP Activity P-06

Introduction / Background

This paper aims to present the benefits of e-learning for the purposes of supporting capacity building in the hydrographic community. It provides some potential options for the production of e-learning training materials to support IHO capacity building initiatives.

Analysis/Discussion

E-learning is now widely used as a means of delivering cost effective, quality training and education across a variety of business sectors. The flexibility that e-learning provides makes it well suited for capacity building purposes to support and complement traditional training approaches and initiatives and deliver consistent messages globally. Enabling individuals to learn at their work place reduces travel costs (and travel visa requirements), reduces time spent away from the work place, and allows students to work at their own pace to fully absorb and understand materials. The ability to download materials in advance and study offline is also useful for areas of the world where reliable internet access is still a challenge. Added features such as subtitles and the ability to re-watch videos or lectures may be helpful for students who find classroom environments challenging.

Conclusions

The IMarEST has the technology, methodology and proven experience to develop e-learning products for capacity building purposes through its learning arm 'MLA' (Marine Learning Alliance). The options shown below are proposed models of how the IMarEST, in partnership with IHO (or other partner organisations) could produce e-learning products designed specifically for hydrographic capacity building. The three recommendations below could be implemented using IMarEST MLA and other organisational partners, such as industry partners, IHO member States or academic institutions and training providers.

Recommendations

1. **IHO commissions IMarEST MLA for development of 'IHO' CB training modules**
   a. IHO commissions IMarEST MLA for the development of e-learning products (either purchased by IHO or possibly using CB funding)
   b. Requirements defined by CBSC and e-learning materials branded "IHO"
   c. The IP is owned by IHO, enabling the re-sale of materials commercially
   d. CBSC may provide materials onward free of charge or at subsidised 'per user' rates for CB participants
   e. Materials could be peer reviewed, quality assured and accredited by IMarEST and/or CBSC / standards board / member States etc.

2. **IMarEST MLA produces training modules and charges a 'per user' rate to the IHO or directly to individual participants**
   a. IMarEST MLA bears the costs of developing materials but requirements are defined by CBSC *before* product development to ensure alignment with IHO CB objectives
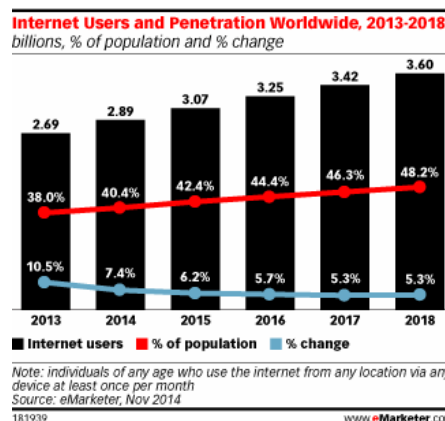   b. IP is retained by IMarEST MLA and materials are branded IMarEST MLA

   c. IHO purchases (or possibly CB funding is used to purchase) 'bundles' of individual user licenses from IMarEST MLA for onward distribution to CB participants as directed by the CBSC.

   d. CBSC may provide materials onward free of charge or at subsidised 'per user' rates for CB participants

   e. Alternatively IMarEST MLA charges end users directly at a 'per user' rate. The IHO / CBSC might choose to subsidise this 'per user' rate using CB funds as directed by the CBSC

   f. Materials could be peer reviewed, quality assured and accredited by IMarEST and/or CBSC / standards board / member States etc.

3. IMarEST MLA and IHO jointly share production costs, IP and profit

   a. Training modules are produced by IMarEST MLA and the production costs are shared 50/50 with the IHO (or possibly using CB funds)

   b. Requirements defined by CBSC before product development to ensure alignment with CBSC objectives

   c. Materials are co-branded with shared IP between IHO and IMarEST

   d. Profit from individual user licenses is shared 50/50 (both for CB purposes or any commercial sales)

   e. CB funding might be used to subsidise the user licenses for capacity building participants

   f. Materials could be peer reviewed, quality assured and accredited by IMarEST and/or CBSC / standards board / member States etc.

Justifica*t*ion and Impacts

E-learning, by definition, means electronic learning and typically today this means using a computer or electronic device (such as a smart phone, iPad or tablet) to deliver part, or all of a course. The concept of e-learning is not new. Virtual learning environments began to thrive in the 1990's and were widely adopted by businesses in the 2000's to deliver staff training programmes. Access to a computer, smart phone or tablet is now globally widespread – today about half the adult population owns a smartphone; by 2020, 80% will.[1] Over 40% of the world's population has access to the internet today, compared with less than 1% in 1995, the graph below depicts the actual and predicted increase in the number of internet users worldwide.

Internet Users and Penetration Worldwide, 2013-2018
billions, % of population and % change

	2013	2014	2015	2016	2017	2018
Internet users	2.69	2.89	3.07	3.25	3.42	3.60
% of population	38.0%	40.4%	42.4%	44.4%	46.3%	48.2%
% change	10.5%	7.4%	6.2%	5.7%	5.3%	5.3%

Note: individuals of any age who use the internet from any location via any device at least once per month
Source: eMarketer, Nov 2014
181939   www.**eMarketer**.com

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[1] http://www.economist.com/news/leaders/21645180-smartphone-ubiquitous-addictive-and-transformative-planet-phones - Feb 28th 2015

The marine industry has been slower than other sectors to embrace e-learning, likely due to the technology challenges associated with accessing materials at sea or offshore, but this gap is closing. E-learning can now be delivered equally well both online and <u>offline</u>, so a constant internet connection is not required. Students can download materials in advance (when they have good access to the internet) and study later offline in a fully functional digital environment.

The offshore and shipping sectors have been successfully using e-learning technologies for some time. For example, in 2015 Seagull Maritime had their software installed on roughly 9,000 ships with more than 450,000 seafarers undertaking at least one e-learning course every year.[2]

A key business benefit for the commercial marine sector is that e-learning is **cost effective and saves time**. By reducing time taken away from the office, removing travel costs and sometimes doing away with printed materials, online learning helps businesses save money and increase workplace productivity.

An e-learning structure has the ability to react quickly to business needs. Rapid access to education and training materials can be a big business benefit. Where training or re-training of staff is deemed critical, e-learning can greatly aid in the flexibility of a company to perform operations or routines at short notice and at low cost. For example where there has been an incident highlighting a lack of understanding and a need for urgent corrective actions or a rapid re-deployment of staff or mission which allows little or no time to get a team up to speed.

E-learning benefits for capacity building
Some of these benefits could resonate equally well in the capacity building sphere where delivering quality training in a cost effective and timely way is challenging. There are finite funding resources and the demand for capacity building is high. Releasing staff to undertake training can also be a problem. Where countries have a reduced hydrographic capability it is likely that releasing key personnel to undertake training (sometimes overseas) is expensive and difficult, this creates a barrier to the much needed upskilling of staff. E-learning provides a way for staff to learn at their own pace and to suit their work schedule, without the need to travel or leave their work place.

Providing quality education and training is vital in ensuring the success of capacity building projects. An e-learning programme does not mean that quality is compromised. In many cases the e-learning delivery mechanism can in fact *improve* learning outcomes whilst delivering consistent messages to a global audience of learners. The globally-consistent 'reach' of e-learning could be an important consideration for IHO and other international organizations which are setting global standards.

There are many ways to ensure the quality of e-learning materials is assured. For example, IMarEST accredits standard university degree programmes and company training schemes worldwide and adopts a rigorous process to assess quality and award an accreditation. It adopts similar processes when awarding professional qualifications such as 'Chartered' status to individuals. IMarEST accredits all Marine Learning Alliance e-learning products demonstrating that all courses have met the high standards required. Additionally, if e-learning products were developed for IHO capacity building they could, for example, be peer reviewed and assessed by IHO, CBSC or IHO member States to ensure consistency and alignment with the capacity building programme and international standards. Content, learning outcomes and even lectures, could potentially be developed by IHO member States, training providers, education providers or IHO working groups.

An additional benefit of using e-learning for training is that with a well implemented Learning Management System (LMS) it's easy to track and prove the progress of learners. This may be a useful tool in the capacity building arena to identify when training has started, or been completed, so that further action to encourage participation can be implemented. An intelligent LMS system can also identify training needs and automatically record an individual's CPD (continuing professional

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[2] Seagull Maritime MD Roger Ringstad, The Marine Professional magazine, June 2015

development). The IMarEST's LMS platform does just this, allowing individuals to gain credits for training and build up a personal CPD record which in turn provides the evidence required to apply for universal individual professional qualifications or certification such as 'Chartered' status. The IMarEST could therefore offer participants a visible 'career path', providing support and opportunities for individuals to develop professionally beyond the initial capacity building activity or training. The ideal result could offer a longer legacy for capacity building which helps drive the professionalism of individuals as they progress throughout their career.

E-learning allows students to work at their own pace, and in cases where learning may be delivered in a language which is not the students' first language, e-learning can be a very effective. The use of subtitles on videos, full transcripts of lectures in multiple languages and the ability to repeatedly review materials can be very helpful for students who might otherwise struggle in a classroom environment. Putting language to one side, this is equally relevant for students who learn at a different pace to each other and might need more time to absorb information. E-learning training could also potentially be successfully delivered in a classroom environment with a tutor working through the e-learning materials with a group of students.

The scope and scale for using e-learning for capacity building in hydrography is immense. E-learning can be used to deliver anything from a simple 'Hydrography Awareness' lecture, a one week training course or a full Master's degree in Hydrography.

E-learning and traditional training approaches are not mutually exclusive and a blended approach could provide the best of both worlds. E-learning can play a key role in reducing costs and contact time with lecturers/trainers, providing all the underpinning knowledge and theory, and for subjects and professions of a vocational nature, e.g. surveying, an instructor-led approach can be used to give students exposure to equipment, systems and processes and learn through doing. As content is easily updated, e-learning follow-up 'refresher modules' can be developed to keep students abreast of any recent developments or new technologies and provide cost effective continuing development for students who have participated in previous capacity building training programmes.

As a registered charity, supporting the IHO capacity building programme fundamentally aligns with the IMarEST's charitable mission of promoting the **"scientific development of the oceans for the benefit of humanity"** and to promote "safe, sustainable, oceans". As the blue economy grows, requirements for hydrography, will continue to grow. Unless we are able to keep up with this growing demand and deliver quality, cost effect training programmes more widely and more efficiently, we will not be able to achieve the IHO's principle aim to **"ensure that all the world's seas, oceans and navigable waters are surveyed and charted".**

Action Required of CBSC14
The CBSC14 is invited to:

    a.   note this report

    b.   consider the options outlined in the recommendations

    c.   take any other action considered appropriate

ANNEX

Background information about the IMarEST and MLA

The IMarEST is an international membership body and learned society for marine professionals. It is a registered charity and the largest marine organisation of its kind. IMarEST works with the global marine community to promote the scientific development of marine engineering, science and technology, providing opportunities for the exchange of ideas and practices and upholding the status, standards and expertise of marine professionals worldwide.

In 2014 the IMarEST established the Marine Learning Alliance (MLA) following the acquisition of the Hydrographic Academy from Plymouth University. The MLA is a wholly owned subsidiary of IMarEST and specialises in distance e-learning for the marine and maritime industry.

The MLA offers undergraduate and postgraduate qualifications in Hydrography and Sustainable Maritime Operations via distance e-learning. A suite of training modules are also offered in a range of subjects and the MLA also delivers bespoke e-learning training for corporate clients. Degree qualifications are awarded in partnership with Plymouth University (in the UK) and all learning is accredited by the IMarEST.

Students access learning materials in a fully functional digital environment. This learning platform works equally well online or offline - enabling students with limited access to the internet to download materials and study offline. Students on degree programs have access and support from a full time academic tutor to ask questions and get advice via email, telephone or skype. Practical skills are learned at intensive 3 week residential modules held in the UK and New Zealand.

More information about the IMarEST and their e-learning arm the MLA, can be found here: www.imarest.org and www.mla-uk.com