A Network of Excellence in Maritime Training

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ABSTRACT

The Network of Excellence in Maritime Training (EMT) proposed in this paper will focus on the standardization of e-Learning and of teaching – learning process by using new Information Society Technologies (IST).

Firstly, EMT intends to solve the handicap caused by the existence of many e-Learning platforms in maritime training field worldwide.

Since in maritime training field they are closed standards, it is appropriate to design an innovative strategy in order to improve e-Learning e.g.:

- elaboration of personalized contents focused on didactic itineraries adaptable to students capacity;
- easy changes of e-Learning conditions depending on the feature of the student groups;
- individual or collective supervision and control of students progress;
- on line evaluation and review of student's results.

On the other hand EMT will face another handicap concerning IST: the lack of adequate maritime training. It is necessary draw up testing and evaluation new didactic resources based on IST.

Finally, EMT is also based on the idea that it is necessary to educate and train citizens, so that they can stand and adapt themselves to a changing maritime society ruled and organized by new technology.

Precisely, EMT will contribute to the International Maritime cohesion and research in the following fields:

1. design and implementation of an international maritime common e-Learning platform to allow the exchange of contents and elaboration of materials by using multimedia resources;
2. research on teaching-learning: educational guides (info-packages), educational methods and e-learning (based on "learning to learning");
3. international teachers training and labor market mobility(the teachers training standardization to facilitate a common qualification and labor market mobility of the maritime teachers;
4. content based on ethical values.

The main result of the network is:

- interoperability among the different existing platforms in the maritime market worldwide and interconnection among the academic-research sectors;
- common system of evaluation, feed-back and control on the elaboration and the dissemination of contents.

1. Introduction

In [1] it is stated that ”it's tempting to think there's a 'quick fix' solution for all the training requirements. With STCW, ISM and Port State Control to concentrate the mind it would certainly be welcomed”. But for the learning process and a person's ability to assimilate information, there are many factors to consider which militate against the instant solution. These issues are at the tip of a massive educational iceberg and we need to step back and examine some of the educational theories that underpin the modern approach to learning.

What's brought these discussions to the fore, in addition to emerging theory during the past thirty years, is of course the huge changes in educational 'technology' that have taken place.Christopher Haughton [!] remembers well „being taught in a classroom where the only teaching aid was an extraordinarily versatile chalk box! This humble artefact became variously a box-shaped vessel, a square DF loop, or a twenty-foot container - depending on the topic being discussed. This is far removed from today's practice where considerable effort goes into attracting, motivating and retaining students and, above all, facilitating their learning.”

To sort out issues concerning education and training requires different approaches and an appreciation of the factors involved. For instance, a captivating medium for one audience may be demotivating for another, and again, people learning alone behave differently than when they're in groups, and of course, how can we measure the intended behavioural changes once the programme is completed?

We might well ask 'what's new about training at sea? In ancient and pre-modern times it was the only way in which knowledge was imparted, indeed shore-based nautical colleges are a relatively modern development. Training in many of the operational requirements of ships has always been done on board and it will always be so.

The technology to do this is impressive as we see Full Mission Ship, Engine and Cargo Simulators, computer suites, distance learning courses, e-learning as well as the advances in presentational techniques. Distance Learning, has had a shaky start in the 1960s has to become a respected, valid and important part of the overall educational jigsaw and for many people it has played an important role in personal and professional development.

As the provenance of Distance Learning has improved, so has the delivering technology. Shipowners and trainers are right to ask whether it can't be harnessed to offer low cost, effective alternatives to expensive shore-based courses.Before looking at some concrete steps a unique maritime network might take, it may do good to take a brief look at some of the theoretical concepts underpinning adult education and training.

2. Theoretical Appreciation & Existing Research

One of the major influences over the past fifteen years has been the acceptance of 'experiential learning' as a crucial element in training and education. Experiential learning in adult education is usually associated with particular theories and practices based on reflection on concrete experience. It infers that learning can never be disembodied from its context. For it to be effective, the learner has to situate his or her learning within the surroundings, the culture and the norms of that experience..

Research into the unique set of considerations, which impinge on maritime students, is difficult to do. Looking at other sectors, there is a good deal of material describing how to integrate learning styles into course development and whether or not they are a necessary component of course development. As in any other sector, academics and educationalists are continually refining their theories and influencing practice.

There is sometimes a temptation to treat education as you would some sort of agricultural process - plant the students in a classroom with teacher, or in front of a computer. Add compost and leave to germinate for weeks/months/years. Reap the harvest and look forward to an educated individual. Unfortunately, some of these plants will undoubtedly fail to grow and, amongst other things, we must blame on the method of cultivation . Unlike plants, the mind needs time to assimilate information and make sense of it in experience of the individual. In most cases, students need to set knowledge to a real situation before they can fully appreciate the issue. And if, by chance, students do manage to pass examinations and assessments at the end of a hothouse process, what evidence is there that real learning has taken place - as opposed to effective memory tests? It is not what is presented to the student, but what the student is led to do that results in learning."

3. Learning Theories

3.1 Learning Styles

The field of education is inextricably linked with that of psychology. One of the greatest breakthroughs in the twentieth century was the dramatic shift from a reductionist or simplistic view of human behaviour to a non-reductionist or humanistic view. Until the early 1960s, behaviourism dominated the field. In this Pavlovian world of stimulus and response, theorists such as Thorndike, Watson and B.F. Skinner posited an almost 'black box' approach based on empiricism. They argued that since it was impossible to measure activity or see activity within the brain, scientists should limit their measurements to what could be observed, i.e. inputs and outputs - in other words the stimulus and response (S-R) just mentioned. The S-R view was populist and held great sway in other areas too, such as education, linguistics and sociology.

The sixties and seventies saw a paradigm shift in thinking from this reductionist perspective. Jean Piaget in his work on child's development, Noam Chomsky's work in linguistics and others developed far more complex non-reductionist views. The cognitive theories of Bloom and humanists such as Maslow (who on a management course hasn't come across his hierarchy of needs!) and Rogers concentrated on how learners attempted to take control over their own life processes. Cognitive and humanistic research leaned more and more towards the importance of experience as a precursor of learning.

As it is mentioned in [1], in the early 1980s, Mezirow, Freire and others stressed that the foundation of learning was the way in which we process experience. They posited that learning begins with experience, continues with reflection and later leads to action.

David Kolb (1979) went on to refine the concept of reflection, and developed what he saw as four learning styles preferred by individuals:

Converger: classified as someone who wants to solve a problem and relies heavily upon "hypothetical-deductive reasoning";

Diverger: classified as someone who solves problems by viewing situations from many perspectives and who relies on generating ideas;

Assimilator: classified as someone who solves problems by inductive reasoning and the "ability to create theoretical models";

Accomodator: classified as someone who solves problems by "carrying out plans and experiments…and adapting to specific immediate circumstances".

In order to determine the learning style will be completed the Learning Style Inventory (LSI) by answering questions further developed in a Self-Scoring Inventory and Interpretation Booklet (Kolb 1985).A researcher, Mumford (1982) argued that LSI must be integrated into the design of courses and that courses should integrate the principles of the learning cycle, learning styles and encouragement of learning to learn. He maintains that by helping students identify their own learning styles it can facilitate the realisation of learning to learn. While Mumford himself designed management courses to include these principles, he was not convinced that course designers in general took any notice. Kolb's work has generated much debate between academics.

Shor (1987) talks about the concept of „situated learning" where situated cognition is used as an instructional strategy to relate subject matter to the needs and concerns of learners.

Lave and Wenger (1991) agree with this perspective and describe the environment that facilitates situated learning. But time is too short here to investigate them fully. It seems there is a growing consensus that learning should take into account individual's learning styles and that instruments should be provided toallow a student diagnose his own preference.

3.2 The Functions of the Contemporary University

It is fully acknowledged that higher education can play an active part in society only to the extent to which all the functions of the contemporary university are promoted outside the academic community simultaneously and coherently.

The university displays more functions than we would be tempted to admit at first sight. The expectations and the requirements of the modern society, based on the principles of democratic freedom and competition can only be the six functions [2] which any higher education institution should promote in a simultaneous manner:

- *The innovative function* also called scientific research, consists in stimulating production and harnessing innovation and original thought without which the depth of knowledge and the performances of human enterprise would not have been possible.

- *The formative function* also called the socio-economic function education consists in the socially expressed need of training the ability to work throughout in an active professional life. Training the trainers is an essential component of this function.

- *The function of occupational mobility* involves competent assisting the educated segment of the active population in their continuous effort to adapt rapidly to the on-going changes on the labour market. These changes are brought about by technical advances in every field of human activity as well as by new communication and information technologies, the globalization of the economic, cultural and political life.

- *The function of conveying culture* means producing and disseminating cultural and scientific creation by a member of the academic community outside the academic environment, using the most diverse means of communication, ranging from personal dialogue to an active presence in the mass media.

- *The political function* involves consistent promoting and defending the democratic premises of governance and social reconstruction with a view to promoting active citizenship, professional ethics and morals throughout the activity and life of members belonging to the academic communities.

- *The perpetuity function* consists in training the new generations of researchers and teachers, in carefully selecting, attracting and motivating the people who will become members of the academic staff so that the university will continue to be a guiding entity of society in the coming years as well.

In order to make all these functions operational in a dynamic, strongly competitive environment, the *training-research binomial* is the only guarantee of quality and competitiveness in a university. It could thus become an element of reference in assessing progress and a powerful partner in the relationship with the actors outside the academic environment. The more attractive and professionally performant the educational programs offered by a university will be the more spectacular the outcome of scientific research carried out by the members

An active partnership between universities and actors of their local environment relies on *a series of circumstances*. Some of these relate to the operation of the economic mechanism in general (what is usually called a functional market economy), others depend on the coherence and stability of the legal, financial and fiscal category of premises and refers to the perception and behavior of the members of the academic community in each university when confronted with real/life situations, outside the walls of the Alma Mater. These premises are likely to support the development of strong partnership, and can be beneficial to the university and the environment outside the academic area; alternate they can prove restrictive, discouraging and de-motivating.

The whole system of higher education management needs to be focused on quality. Operating on a similar principle to that of an economic unit, strategic management in a university is based on involving all members of the academic community in ensuring long/term success through customer satisfaction and obtaining advantages for the university and the society. Not only input factors but all processes carried out by members of the academic community need to be continuously evaluated as regards quality, by the very people taking part in this formative, research, administrative and management processes. These aspects of quality self/evaluation are accompanied by a thorough analysis of the results obtained by contacting the world outside the university and competing with products offered by other universities. Total quality management in a university implies therefore the careful consideration of every component of the academic community/s activity (not only the initial training component). There is no guarantee of having/trained graduates, capable of rapid integration in an active professional life unless there is a continuous activity of research and development. Every function carried out by the university needs to be supported by transparent, internal mechanism for quality self/evaluation. Not only the teaching staff is involved in the evaluation process, but undergraduates as well, together with research staff, auxiliary personnel, employers and graduates during their first three to five years from graduation. Quality assurance is not only meant to meet customer satisfaction, it also ensures the university's integration outside the academic environment, its participation in international academic networks.

3.3 Life Long Learning

Today it is not possible to separate the initial education from life long learning, since the knowledge acquired in a university and guaranteed by a diploma degree does not allow anyone more than 5 years before he has to go back to school. So, professional life appears as periods of work interrupted by periods of study. This phenomenon, which is obviously due to the rapid evolution of knowledge in science and technology is characterized as life long learning.

The paradigm of education: since their creation in the Middle Ages, universities have been made up of academics able to create and spread knowledge to students, their disciples, who one day may successfully take their place.

The three units of this traditional education, should we make an analogy with the classical plays, are:
- the unity of time;
- the unity of place;
- the unity of level, i.e. the students has been selected.

Life long learning brings about a triple breach into the classical concept of learning [3]. At first, the unity of time and place disappear in distance e-Learning, which addresses to people who already work and are difficult and expensive to gather in a place at the same time. E-Learning uses for educational purposes all resources of media: internet, intranet and means of communication. The second breach is the disappearance of level unity and the individualization of education. Life long learning reunites people that have very diverse cultural pasts and techniques of learning. To attain its goal, this kind of education has to develop certain autonomy of the learner. This will ensure the implementation of the guided self-informing system- a means of learning designed by the learner himself. In adult education the positions are reversed: the learner is in the centre of the guided self-informing system- he pilots his own formation, while the part of the teacher is still essential but changes its nature- he is the guide, the advisor, the "chief" of his formation project. Life long learning gives learners new knowledge, but at the same time it develops their professional experience.

In its turn, life long learning also leads to a three-fold breach when compared to the traditional university education [3].

The first one is passing from the paradigm of the learner – i.e. the teacher is given new missions and the learner previous knowledge is validated. The second one is the passage from in the traditional university to the virtual university. This passage as the first mentioned above, will also take some time, but it is only natural to make use of all modern means of communication. To achieve a per-formative virtual university it will also lake a lot of didactic and pedagogical studies.

The third breach, life long learning as a concept in itself, is equally important – it means that initial formation is but a first step in the formation to be later completed by life long learning.

3.4 Training Needs Analysis

There are no universal solutions to producing a better-trained crew and there are some very practical steps training officers can take before committing themselves to expensive training solutions. A thing everyone should do in any case is conduct their own Training Needs Analysis before investing. Any provider of training needs to match product and delivery mechanism to the need.

3.5 Why Do the Crews Have to Learn?

The answer is related to personal development, professional curiosity and learning for learning's sake,or for job satisfaction, reduction in lost-time incidents, reduction in major incident probability, higher efficiency, higher crew morale leading to higher retention and lower crew turnover. All this give more return for the training bucks quite apart from other substantial savings to the personnel cost centre.

In order to develop a Network for Maritime Training it has to answer the following questions::What are the expected outcomes of the learning? Do the learners expect to perform a task better, quicker, more efficiently, safer? Can you measure the improvement? Does learning provide development for the individual that may require a more academic approach? Are the students' expectations the same as yours? Having decided this (and it may be good to do this consulting the learner) what strategies have you devised to evaluate the process? What benchmarks have you set? What will you do if you fall short of the outcomes (wasted resources) or if you exceed outcomes (which could introduce tricky motivational issues)? Who is the target audience? What ranks are involved? Ishore staff involved? What is their age prior experience and knowledge? What cultural factors are involved? What language do you need? What do they want to learn? - which may be different from what you want them to learn?What do they have to learn? Obviously not the same thing at all since there's a whole new set of motivational issues to address. This question could be driven by Company Standing Orders, STCW, ISM, SOLAS, MARPOL - the list is endless.

What are the students' preferred learning styles? We all have a tendency to assume that the training we ourselves went through was probably amongst the best of systems, that what was good for us is good for them.

How will you evaluate the effectiveness of the training you buy? This is a subject all of its own involving Quality Assurance, monitoring and, of course, Assessment. . If not, how can you plan your future strategy? What are you going to do about Officers or crewmembers who may fail to reach the satisfactory level?

Concerning the question „where" , I think the message coming through is there are no two learning situations alike. It depends on the context, the content and the desired outcomes. Shore-based and ship-based learning sit alongside each other very compatibly - people must attend shore-based fire-fighting courses where we can subject them to realistic scenarios but then they must bring that knowledge and learning back to the ship. Here it can be honed, focused and applied in specific situations and with the equipment available. In another example of shore-based training, an occasional criticism from senior officers on Full Mission Ship Simulators is that „it's no use because we have different kits on board our ships". Delegates with that opinion miss the point completely and have to be persuaded that the course is less about learning which knobs and switches to turn and more about the higher-order cognitive skills which officers need to develop and practice within the safety of a simulated scenario.

We continue to learn all our lives - sometimes in a structured way, sometimes less formally. The context and facilitation are vital to the effectiveness of the learning experience, shipboard or shoreside.

4. The Network of Excellence in Maritime Training (EMT)

4.1 Design

The Network of Excellence in Maritime Training (EMT) will focus on the standardization of e-Learning and of teaching/learning process by using new Information Society Technologies (IST).

Firstly, EMT intends to solve the handicap caused by the existence of many e-Learning platforms in maritime training field worldwide i.e. International Ocean Institute Virtual University (IOIVU), European Virtual Maritime Institute (EVIMAR), MILES Maritime Institute Canada.

In this way, the resulting Network will join and gather all together several key aspects in the learning and research field as well as the popularization and the use of the IST in the maritime educational field.

Because in maritime training field they are closed standards, is it appropriate to design of an innovative strategy in order to improve e-Learning e.g.:

- elaboration of personalized contents focused on didactic itineraries adaptable to students capacity;
- easy changes of e-Learning conditions depending on the feature of the student groups;
- individual or collective supervision and control of students progress;
- on line evaluation and review of the student results.

On the other hand EMT will face another handicap concerning IST: the lack of an adequate maritime training system. It is necessary the draw up, testing and evaluation of new didactic resources based on IST.

Finally EMT is also based on the idea that it is necessary to educate and train citizens, so that they can face and adapt themselves to a changing maritime society ruled and organized by new technology.

Precisely, EMT will contribute to the International Maritime cohesion and research in the following fields:

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- content based on ethical values.

4.2 Classified Objectives List

The EMT objectives stated below bellow are down into the following research fields above mentioned:

1. Interoperability among the different existing platforms in the worldwide maritime educational systems and interconnection among the maritime industries and academic research sectors.
   Universal access to the information and the exchange of materials by using IST is intended by all producers and users, mainly in the education field. It is necessary to achieve interoperability among the different existing platforms in the market as well as the interconnection among the industrial and academic sectors which own and use the protocols and technologies indispensable for it (SCORM, IMS, etc.). In this sense, it is important to indicate that the standard development of models is a tendency at worldwide level.

2. Common system of evaluation, feedback and control on the elaboration and the dissemination of contents.
   Interoperability is much more than a simple technical question. It also requires conformity to educational materials, which can only be achieved by a common approach concerning the design, administration and maintenance of resources. Eventually, issues such as the guarantee of quality standards also demand a common system for evaluation, feedback and control on the elaboration and the dissemination of e-Learning contents.

3. Research on teaching-learning by using EMT:
   - 3.1 Inter-operability of different e-Learning systems and transferability of contents and e-Learning courses.
   - 3.2 Methodological approach on the exchange of e-Learning materials in the European context.
   - 3.3 Standardization of contents, mainly regarding educational curricula of different levels, and the values which they are based on, as well as the references and approaches to the European heritage and identity contained.
   - 3.4 Design of educational guides for different knowledge areas, based on e-Learning.
   - 3.5 Standardization of these educational guides so that they maybe applied in the whole European Union.
   - 3.6 Quick answer to the new and changing e-Learning needs and demands.

4.3 Participants of the Network of Excellence

Among the participant entities, both as producers or users of the Network results, the following bodies can be named (research and education centers concerning different curricular areas, didactics and informatics):

- didactics and teachers training;
- humanities;
- sociology, social behavior;
- economic sciences;
- political sciences;

- psychology;
- communication and multimedia Sciences;
- units of e-Learning;
- units of Computers Innovation.

Due to the necessary interaction between the technical aspects and the curricular aspects, all the entities involved in the network will work in the following fields:

- Design, experimentation, evaluation and exchange of new teaching/learning models through IST.
- Design, application, evaluation and dissemination of a new standardized model of the European teachers formation in the different curricular areas and in the use of the IST.
- Creation, application and evaluation of contents and didactic resources for each curricular area concerning the European values, heritage and identity. The main result of this network is:
  - Inter-operability among the different existing platforms in the worldwide market and inter-connection among the academic-research sectors;
  - common system of evaluation, feed-back and control on the elaboration and the dissemination of contents.

In order to be set up, the following tasks will have to be completed: commun curriculum development; course development; formalising agreements; development EMT website; the set up of the fundamental administrative process; the establishement of the accounting and audit system; students admitting procedures (recruitment, the application procedure,admission procedures, colection of fees,alumni relations), potential partner identification,etc.

The EMT is more than a university wich provides on-line teaching, but also an umbrella university, which can produce and deliver any education in maritime affairs if it is required in the modern world.

5. Conclusions

1. In the last decade the paradigm of education created in the middle ages: the unity of time, the unity of place and the unity of level was changed. It was replaced by: e-Learning, long life learning, authonomy of the learner.

2. For this reason, the Maritime Universities have to develop speciala programes or, cheaper and mor efficient solutions, as the set up of a unique platform EMT. The EMT is an open system that welcomes the participation of all IAMU Universities and scientific and technical institutions in any part of the world.

3. Since all the Maritime Universities will be active parts of this network, the EMT could become a discussions and decisiosn partner of IMO.

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