Maritime education and Training

"Distance learning"

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Introduction

Computers are part of our daily lives. They are part of the control, operation & maintenance of sophisticated devices around us. At the educational front, education experts have realised that the future is in information technology and computers.

What has really aided the transform is the huge development in the computer industry itself; from large, expensive, slow units with a small memory capacity, to smaller, faster, cheaper small units, indeed some are mobile laptops.

The Internet has been instrumental in changing users' habits and expectations in computers. What is the Internet? The Internet is a network of networks, linking computers to computers to provide or to access information.

Satellites and their capabilities have also played a major role in the revolution of information technology: They aid transform of information, communications, within seconds from one part of the earth to the other. Making it possible, to access Internet & e-mails while in the middle of the ocean, or at a 30,000 feet altitude.

Maritime education also aims to adapt to the new changes, as "Computers and computing are the catalyst behind many changes affecting maritime industry operations" Muirhead (2002).

Distance learning :

Definitions

- The United States Distance Learning Association (USDLA), founded in 1987, defines distance learning as *"The acquisition of knowledge and skills through mediated information and instruction, encompassing all technologies and other forms of learning at a distance."*

" The term distance learning (DL), refers to a teaching-learning arrangements in which the learner and teacher are separated by geography, time, and, technology (i.e. voice, video, printed data, CBT, CAL, CAI), & Internet is used to bridge the instructional gap". Willis (2001). Supporting the above, Garrison (1989) concedes that the main characteristic of DL is the non-contiguity of the teacher and learner.

Distance Learners:

"Distance learning is a viable alternative, for those living in sparsely populated regions or for those with domestic responsibilities that make leaving home to attend school a daunting if not impossible task" Voyager (2001).

Compared to the traditional setting of a classroom, distance learning is less structured, with the experience being focused on the students taking the course. Due to this focus, the student has more responsibility. The students must be able to manage the learning process.

The Commonwealth of Learning (COL) (2003) sees DL as a "program that can provide adults with a second chance at a college education, reach those disadvantaged by limited time, distance or physical disability, and update the knowledge base of workers at their places of employment".

In Egypt, the latest World Bank statistics show that 22% of the population did not have any kind of education qualification. Hence, teaching those and, millions like them in the world would have profound impact on national economies.

Williams (1999) argues that distance learners have to work harder then traditional learners. Pay double attention, because if they miss a part of a live videoconference with their tutors, as it is time limited, they cannot go after their tutors to ask them to clarify whatever they may have missed as mentioned by Muirhead (2003). They will also have to make themselves comfortable with new technology, and find adequate time along with their jobs, social life requirements, to study, and, do research.

Kirkwood (2000) also states that besides the above, distance learners should develop strategies to maximize their undisturbed study time, adopt a study schedule which will suite their needs.

Brey (1998) also briefly describes distance learners as those who "cannot attend class in a campus, deprived from the advantages of being in a campus, they quickly feel isolated, tired & irritated from the new technologies they are using." Those symptoms can easily lead to giving up, dropping out, which is the fatal enemy of DL. Consequently, support and Guidance is required to ensure the continuity of distance learners.

Student Support:

In a distance-learning program, learner support may be the responsibility of the instructor who teaches on the Internet or by correspondence, broadcasting, or video or audio conferencing.

Grenville (2000) also mentions that a popular notion of DL is that students feel isolated from teachers and peers. However, this has been less at the British Open University (OU) as since its established in 1969, student support was a central concern to the university from the very start. The words of Sir John Daniel vice-chancellor of OU states that "student support has been one of the main reasons that have contributed to the successes of the OU."

Each student enrolled with OU, is provided with a named contact " counsellor", tutors are assigned with maximum 20 learners, in order that they can continuously monitor. A common characteristic of distance learning is that it is student focused; therefore the teacher has to enhance this by shifting the focus from him to learner, continuously trying to support and encourage them to ease their fears. Williams (1999) also mentions that the tutor should always show enhancing elements, which will develop learners' confidence and satisfaction. However, as learners are more motivated if they are in frequent contact with the instructor, more structured contact might be utilized as a motivational tool.

DELIVERY OF DISTANCE LEARNING:

1-Asynchronous:

The term Asynchronous means that "learner and instructor transmit messages one way, and receive responses after a lengthy delay" Muirhead (2003). Examples are found in videos & audiotapes, printed materials, television broadcast and the e-mail. The e-mail is considered the most powerful tool in DL asynchronous communications. As the tutor can send questions, assignments, inquiries to his students, and students can send the feed back using same way.

The Bulletin Board System (BBS) method of communicating is also very useful. This system allows students to interact by dropping messages to each other, sharing, discussing their views. The disadvantage of this system is that it has less privacy than e-mail.

Videos, audiotapes and TV broadcasts are also well known methods in asynchronous DL. One advantage of asynchronous learning networks is that "they allow the student to learn at their leisure through CD ROMs & electronic conferencing" Muirhead (2002). Learners who

depend on only asynchronous systems, are considered to be passive, (Williams 1999; Muirhead, 2003), as there is no interaction between tutor and learner.

2-Synchronous

Synchronous mode of communications are systems where "Messages are transmitted simultaneously between sender and receiver (two way) and receive immediate feed back & interaction between the separate parties" Muirhead (2003).

Computer-Mediated Communication (CMC) encompasses various forms of information access and communication, including synchronous such as live two way audio/ video conference, chat rooms, CBT, CAL. FAHY (2001), states that it is now practically ever-present in distance education and training. Williams (1999) however, concedes that it is only moderately active.

CMC creates ideal conditions for interaction, a situation in which in the best instances interaction replaces the isolation of DL. Moreover, knowledge can be significantly obtained, updated, and shared in CMC. CMC reduces "transactional distance" and helps facilitate the interaction desired in distance learning situations to reduce isolation: learner-tutor, learner-content, and learner- learner. CMC also accommodates asynchronous communications e.g. e-mail & (BBS).

3-HYBRID:

The hybrid environment is achieved when all the above technologies, including Internet and the World Wide Web (www), are used in a DL virtual classroom. The learner in this process, is considered by Williams (99) "highly active".

4- Computers & DL:

Developments in the computers have made them the corner stone in DL. Today's computers are provided with huge memory capacity, enormous functions, which break distance, time, and geographical barriers for DL utility.

As computers have multimedia; graphics, print, audio, and video functions, and can link several technologies, e.g., Interactive video and CD-ROM technologies, they are therefore ideal tools for DL.

CBT is quite useful in education and training, and may have the potential to replace traditional teaching methods. "Seagull" Norway is one of the biggest companies providing CBT packages. British Petroleum is one of their clients.
During our field trip to their offices, they demonstrated some CBT programs. They actually provide CBT programs for even small details on the ship. "Today's modern ship is a floating computer centre" Muirhaed (2002), hence the advent of computers-based-training will also be prevalent.

Individual DL computers are the ideal; developing computer networks for universities is a costly and getting the right soft/hardware, while the span in computer technological development is very fast, they may tend to make today's brand new software, obsolete in very short time span.
From the above, therefore, there is no doubt that computers are important in DL, for without certain computer applications, distance learning would not be handicapped

5-The Internet & DL:

Distributing the material via Internet gives the educational organization the possibility to expand globally, and allows fast delivery to the learner. Distributing distance learning material in hypertext format, which is as " the glue that binds multimedia together on a web page", Muirhead (2003). Karjalainen (2000) adds that it gives additional benefit for learner, as the "node-link structure" of hypertext gives the learner the possibility to study the material flexibly.

Personal Computer owners & Internet users in the world

Year	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2005
Personal computers*	155	175	200	235	275	325	375	435	500	555	615	955
Internet users *	7.0	10	21	40	74	117	183	277	399	502	580	875

* Figures are in Millions. Source: International Telecommunication Union.

The above table shows how computers & Internet use have increased in the last 10 years, making the Internet the ideal host for DL, and personal computers the best tools for DL.

The Internet hosts the e-mailing system, BBS and live video audio conferencing. More and more colleges, universities, and citizens are connecting to the Internet, via regional non-profit networks, e.g. (Yahoo & MSN) or by subscribing to information services provided by for-profit companies.

Providing more possibilities for distance educators to overcome time and distance barriers to reach students, the Internet also encompasses the World Wide Web (WWW). The (WWW), provides Internet users with a regular and suitable means of accessing a wide variety of resources (pictures, text, data, sound, video) available on the Internet.

There is no doubt about the importance of the Internet in DL, however, the authenticity of information supplied by some webs, will be a barrier for proper DL. Boshier (2001), comments on fraud on the net by saying "in the USA, numerous sites on the net are offering DL, under the name of University of … Others contain little but claim to be the best!"

Advertisements can cause distraction to students on the net. Again, in developing countries, the server may drop for hours, sometimes days from personal experience. Hence, hindering the whole process of DL.

6-Course Material:

Williams (1999) recommends that the material should be "pedagogically sound". Because of student's isolation, Muirhead (2003) states " well structured material should provide the student with a sense of communicating & interacting with the delivering institution & tutor." The material should also carry a "notion of dialogue … as if it is communicating personally to learners" Muirhead (2003). Kirkwood (2000), also agrees that material should be made in a way that will enable learners to "plan & execute their studies."

COL recommends that a survey should be done before designing a course. This should cover the following the learner's circumstances:

a. Who are they?
b. Their ages?
c. Employed or not…etc.
d. And in addition, the course's objectives,

e. Structure & content,
f. Type of media to be used,
g. Applicability to students,
h. Does it provide the necessary interaction and
i. finally, how is it going to be assessed & evaluated?

7- Choosing the Best Media:

The University of Idaho, (2001), recommends that effective distance education programs begin with careful planning, a focused understanding of course requirements and student needs. Appropriate technology can only be selected once these elements are understood in detail. Although technology plays a key role in the delivery of distance education, educators must remain focused on instructional outcomes, not the technology of delivery.

Williams (1999) and the (COL), both encourage a survey to be done before determining which technology to be used, and since DL is student centred, then ideally the first thing to think of is which technology is applicable to students. Nevertheless, the method chosen should also be suitable for the organisation also.

A study done by Kinnear, et al. (2001) showed that students are highly impressed by Video conferencing, as it was highly interactive. He also mentioned that the technical quality of the link predicts to a certain extent the overall satisfaction for the parties involved. Nevertheless, video conferencing is still costly, Muirhead (2003).

We can conclude that the use of media, computers or technology can be very useful in a learning situation, but they must be used pedagogically, not only because they are available.

***8*- Assessment**

In traditional classroom teaching, assessment can be through tests, assignments or exams. It is the same in DL; "good assessment practices for external students are the same as for internal students" as, explained by Muirhead (2003). Good practices include relevance of the assessment to the learning, which must be also valid and reliable. Assessment in DL, can be through assignments, on line tests that will disappear after a certain time as clarified by Muirhead (2003).

9-Evaluation

A crucial part in the student support requires getting feedback from the students which means a lot to students. Evaluation in DL can be through the studies (formative), or by questionnaires: faxed, posted or e-mailed to them, or at the end of the study program (Summative). The evaluation should cover:

a. The technologies used, were they applicable to students.
b. The level of Interaction was sufficient.
c. The course material, contents were valuable to students.
d. Access to information.
e. Exams and assignments.

10- Advantages for DL

Muirhead(2003) coined some of the advantages of DL to be:

1. DL reduces travel costs and makes time formerly spent travelling available for more productive purposes.
2. Allows training of more people, and provides a variety of courses to be delivered to a wide sector of the society, which are easier to schedule and coordinate. Material once loaded on the net can be easily updated.
3. Ability to add students and instructors as needed without incurring significant additional expenses.
4. Students learn at own pace of time, and through the net, they can access wide range of data & information Programs offer networked sites for group learning and collaborative problem serving.
5. With globalization, DL is an ideal method for universities to expand to wider number of students.
6. IT increases choice of how work is delivered, according to student's personal needs.
7. Ability to host on line outside speakers.
8. Institution delivering DL, is able to reach more students.

11-Limittations of DL:

1. In developing nations, accesses to Internet might be difficult. Furthermore, if the bandwidth used is too small, this might obstruct the use of certain technologies such as video conferencing, Farrell (1999). World Bank statistics also show that only 1% of the population of some developing nations own a PC & can access the net, while in Europe, 50% have both.
2. Computer and IT illiteracy by learners and even tutors to some extent can hamper the whole concept of having DL.

1. Creating 1 DL task, require 2-4 months work, which students solve in 1 hour, consequently, it is time consuming
2. A major problem with DL is the high drop out rate. Therefore in countries with poor IT infrastructure a higher rate might occur.
3. Students in DL suffer from isolation, again contributing to drop out.
4. Philips et al (2001) & Muirhaed (2003), also indicate that the amount of information, which can be obtained via a search engine, is enormous, Therefore good filtering skills are required.
5. Lack of interaction between students/ tutor, students/students & students material.
6. The increasing reliability on technology by distance learners leads to frustration in case of mal functioning.
7. DL might not be ideal for students with poor English language skills.
8. Internet & PC's are vulnerable to viruses & mirroring which might lead to huge financial loss.
9. Good traditional teachers are not necessary good on line teachers. Therefore training is required. Oluwatoyin (2002)

12- Improving Interaction:

We Learn 70% of what We Hear, see & Do. Muirhead (2003)

The above sentence is the best defence for DL. However, critics of DL have focused solely on Asynchronous communications that it slows down the educational process, this might be true. However, modern technology and certain pedagogical techniques when applied can certainly overcome some of the disadvantages of DL.

Stacey (1999) also states that the social, affective, and cognitive benefits of peer interaction and collaboration, which had previously been possible only in face-to-face situations, are now feasible with the mediation of computer communication. Interaction in DL supports the student by overcoming the isolation feelings.

Beside technology, pedagogical techniques such as Collaborative Online Learning (COL), Problem Based Learning (PBL), the Constructivism theory, can certainly aid with technology to improve interaction in DL.

12-1 Problem-Based Learning (PBL) & Collaborative Online Learning (COL):

Bernard, et al. (2002) Comments on PBL by saying "its emphasis lies in the mutual engagement of learners in the learning process". Under this process the tutor will create a

realistic (debate, project or problem) from real life and ask his learners to "collaborate" together to solve it. This method encourages active & constructive learning and deep processing of information and critical thinking. Further more it is regarded as the most promising pedagogical approach to DL.

The ideal method for students to interact, share their views is the BBS. In order to achieve maximum successes to COL & PBL, there is need to make the learners feel that they are part of the system, also to make the atmosphere more friendly and democratic, to encourage the students express their views.

Unfortunately the above can only be applied through a small number of students. Both methods can trigger curiosity, motives and trust of the information as the tutor created problem, serves to challenge students. Hence, they will put their efforts together and teamwork will be embedded in them.

12-2- Constructivism Theory:

Constructivism theory states: "learning is not the same as acquiring unrelated facts, but requires new knowledge to be incorporated into existing knowledge. Learning based on real life scenarios facilitates this process" McDermott (2000).

Constructivism coincides and encourages in a sense PBL & COL. Combining the three methods together plus the right technology at the right time can certainly overcome some disadvantages in DL.

MET INSTITUTES & DL:

Most MET institutions are using CBT as part of their educational process. However, some people fell that DL is the answer for problems related to maritime institutes such as "Non permanent attendance at courses, seminars & laboratories" Dinu (2000).

Lewarn (2001) states that, " If MET providers do not start developing their own future in a coherent, structured & systematic way, then others will impose the change on them." Leaving MET providers, to think and react to the aspects of change.

Challenges to MET:

"In the 21st century, the maritime education and training community finds itself facing an explosion of new developments in communication tools, simulation, software training

programs and expanding use of computers linked to the Internet and the Web" Muirhead (2002).

Currently education is becoming globalized, and it is treated as a commodity, where the customer is the student. Lewarn (2001) states that globalization of education will lead to a quick downfall of the traditional education, & will induce a giant leap towards borderless education.

"Maritime educational institutions also face the challenge today of utilising new technology, communications and teaching methodologies in order to enhance the learning environment of tomorrow. Whether offering on-campus or off-campus courses, "computers and IT resources are rapidly becoming indispensable delivery tools" Muirhead (2002).

For MET institutions, to meet the challenge, they must adopt the new techniques and hopefully not on the account of quality. Muirhead (2000) states that the "quality of academic standards & credibility is dependant upon many factors. In today's world, provision of up-to-minute computing and Internet services is crucial for education.

Tradionally, maritime educators have focused on the technical aspects of their systems, but with the current strong changes, providers of MET will need to take on these changes in order to maintain their role & be able to reserve a seat among others in the educational world, otherwise, they will simply perish.

One important aspect for DL, is that it can provide life-long learning. Hence changing what was known to be "just in case" to "just in time" which means life long learning (Williams, 1999 & Lewarn, 2001). This can only be provided through DL.

However for DL to be fully adopted and implemented there is a need for legal guidelines set and recognized by the IMO. This would avoid conflict between providers and maritime administrations. A clear-cut definition of the contents of knowledge and skills constituting the DL subject should also be clarified by IMO.

Costs:

Adopting DL within institutions is a costly matter to build the infrastructure, which might not be beneficial. Students within the EU are reluctant to go to sea (METHAR, 2002), hence Lewran (2001), recommends that to overcome any financial/ lack of experts problems, MET institutes should go into alliances to provide DL. DL could also be provided through an

educational organization created through the IAMU, as some institutions might have the resources, but not the experts & vice-versa. This might even lead to a global harmonized MET.

Brasan (2002), argues that it is somehow not practical to adopt DL through an organization as suggested by Lewarn. Research done by Brasan shows that: Out of 27 maritime universities (all IAMU members), 67% have an electronic library WEB page and some of these universities possess huge collections of books, periodicals, articles and papers, related to the maritime sector. However, only 11% have on their sites free documents and only 7% of them have free teaching materials on their web pages. Adding to that, „electronic copyright situation is complex & not clear".Muirhead (2003)

Simulator & hands-on Training:

Again critics say that DL weaknesses is in providing simulator training. However, MET class 2003 last September, trained on a simulator online. The provider was in Denmark, and class was in Malmö. Kongesborg (Norway) and their web page maritime e-campus which we personally visited provides online simulator training and assessment through the internet.

Therefore, simulator training can be provided at sea, or anywhere; satellites are the main tools for doing so. However, it is left now to shipowners & masters to allow thier crew to use communication technologies on board.

DL Tutor & Class Room Tutor:

"Resistance to change is a natural feeling." McMullen (2002).

Introduction of new methods will no doubt bring resistance. Those who are computer illiterate will certainly resist change. Fisher & Muirhead (2002) note, " in addition to having adequate teaching skills, teachers require the knowledge of & ability to use new technologies". But how can this be achieved?

The DL course by Curtin University in Australia for a graduate certificate in learning technologies might provide some answers. The course is designed to assist teachers of all learning ages, groups to become leaders in technology within their institutes.

A second approach recommended by Muirhead (2001) would be to train the trainers, by training a group of lecturers on new technology through workshops, and then they can pass it to their colleagues.

Youngblood, et al. (2001), suggests that for ideal DL, the tutor should consider himself as a facilitator more than a tutor or in other words as a "mediator". This could be done through, clarifying problems, monitoring participation; keeping discussions in PBL on track, and contacting learners frequently.

CONCLUSION:

It is now left for education institutions to adapt to new techniques in teaching. DL is not a theory or a phenomenon that will fade away. On the contrary, the technology revolution is here to stay. Hence, traditional classroom teachers should also smoothly adapt to the new technologies other than resisting them. This will ensure them a place in the coming world of DL.

Teaching and learning at a distance is demanding. However, learning will be more meaningful and deeper for distant students, if the students and their instructors share responsibility for developing learning goals and objectives, relating new information to examples that make sense to learners and evaluating what is being learned. This is the challenge and the opportunity provided by DE.

Whereas distance education is growing, there are still fears that the products are 'not as good' as those trained through the full time residential programmes. The obligation is therefore, on the DL providers to ensure that the systems put in place facilitate quality teacher training.

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