CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND

While the title of this study may suggest a rather specialised concept, the recent developments both in information technology on the one hand and education on the other have succeeded in throwing this once restricted area into the limelight in the interest of the participants of all forms of human pursuits, and the benefits accruable from information technology can be harnessed as much in training as in any other field.

This study takes a look at Web Education Management Systems (WEMS) and its relevance to education and academic institutions, and ultimately the World Maritime University (WMU). A closer look at the nature and attributes of WEMS is an absolute necessity, so is a cursory look at its impact on education delivery and indeed maritime education.

Web Education Management Systems

Simply put, WEMS is the use of the Internet and the World Wide Web for educational purposes. The Internet Society defines the Internet as a global network of networks enabling computers of all kinds to directly and transparently communicate and share services throughout much of the world. The Internet was originally conceived by the Advanced Research Projects Agency (ARPA) of the United States government in 1969 and was first known as the ARPANET. The original aim was to create a network that would allow users of a research computer at one university to be able to "talk to" research computers at other universities. Given that it is a very valuable and enabling capability for so many people, institutions and organizations, it also serves as a shared global resource of information, knowledge, and means of collaboration, communication and cooperation among countless diverse communities, interests and vocations.

The World Wide Web on its own is the conglomeration of the resources and users on the Internet that are using the Hypertext Transfer Protocol (HTTP). A broader definition comes from the organization that Web inventor Tim Berners-Lee helped found, the World Wide Web Consortium (W3C): "The World Wide Web is the universe of network-accessible information, an embodiment of human knowledge." With these qualities, the World Wide Web and the Internet can no longer be extricated from each other, and both form a colossal capacity for information, communication and education.

WEMS involves the harnessing of these capacities for the purpose of education delivery in many forms. The Internet can be a source of information to which the student can turn as a backup to classroom teaching; it can be employed to hold information for specifically targeted groups; and it can as well be employed for real time lecture delivery. However, there is more to WEMS than just these. The education is actually managed. This is because it is vital that the target population is reached, and also because the education delivery must be so done that the maximum efficiency is achieved. This study shall take a look at the factors affecting these two considerations, and how they may be improved or eliminated, as appropriate.

The World Maritime University

The World Maritime University (WMU) was established in 1983 to serve as a centre for the training of specialised personnel for the global maritime community. This came in the wake of the cry for better manning requirements and indeed higher degrees of competence both on and offshore, in the interest of the protection lives, property and the marine environment. The place of the WMU was and still is to ensure better trainers for better seafarers, and better managers and practitioners for every facet of maritime trade.

World Maritime University Aims And Goals

This includes increasing the number of highly trained specialist personnel across the world, with the belief of the International Maritime Organisation (IMO) that this will enable the implementation of international maritime conventions in the interest of the global community. Other expected results are the improvement of maritime safety, protection of the marine environment, improved efficiency of international shipping and ports, sustainable maritime economic growth in the developing countries with integrated planning, allowing the development of each sector without damage to any other.

In addition, WMU hopes to encourage international co-operation to solve international maritime problems as well as co-ordinate action internationally for the benefit of the physical environment. The graduates are hence expected to upon completion of their programmes, return home and employ their newly gained expertise in the pursuit of maritime excellence. They are ultimately expected to help their nations to achieve the highest practicable standards in marine transportation and development.

World Maritime University Achievements And Future Needs

Presently, WMU boasts of about 1,800 graduates in about 140 countries. This is a great achievement. However, a reconsideration of the aims and goals will suggest that the present achievements may then be inadequate. According to Muirhead (2000) there are 12 WMU Maritime Education and Training (MET) graduates in the Philippines, out of 6000 in employ in the country. This example represents a 0.2% reach in the population, and the Philippines are very important in the global maritime workforce. Simply put, the reach of WMU in the maritime community is much less than will be desired. For one, the WMU graduates have where they are, been really able to affect decision making in the right direction. The representation of nations in international conferences, conventions and workshops has witnessed an increased participation of WMU graduates among these representatives. The efforts of WMU are therefore laudable, and should not be discouraged.

Given the above mixture of observed achievements against the backdrop of the inadequacy of these achievements on a global scale, the natural inclination is to increase the outreach of the WMU. This cannot be denied, and is absolutely necessary

1.2 PURPOSE AND OBJECTIVES OF THE RESEARCH.

Purpose Of The Study.

Principally, the study sets out to answer the research questions itemised below. It is hoped that a better insight will be given to Internet use for academic purposes, and that the outcome of the study will contribute to the improvement of education delivery via the internet on the whole, and that of the WMU in particular.

Research Questions.

1. WEMS – why the need? Would WEMS provide a vehicle for effective management of academic functions?
2. What advantages are there for academic institutions generally?
3. Are these advantages exploitable without far reaching negative consequences, and are they sustainable?
4. Are learners readily embracing web education?
5. What are the learner-approaches to web education and how do learner habits affect its effectiveness?
6. What can be done to modify learner-approaches?
7. What are the limitations to the use of web based education and WEMS?
8. Is the WMU presently at the peak of its possible influence in the promotion of Maritime Education and Training or are there new areas deserving further investigation? Do Web Education Systems hold any solutions for any such observed needs?
9. What are the attitudes of the students and instructors in the face of this development?

10. What functions should be part of a future WMU WEMS structure?

1.3 METHODOLOGY.

Literature and Online Review

A detailed literature and online review of Internet use was conducted to ascertain the availability of Web Education Management Systems. The sensitivity of service production in the general context and the maritime context were examined. The works of various authors on the subject and related ones were also examined.

Hypotheses and Questionnaire Issue

Approaching the study using the Ex Post Facto research method as described by Sproull (1988, p.149), certain hypotheses were made and tested by the use of a questionnaire by Purposive Sampling as described by Silverman (2000, p.104), as demanded by the nature of the study. The questionnaire was issued to 96 students and 42 responses were received, giving a response rare of 43.75%.

A simple Percentage method of grading and summation of the questionnaire responses was employed, since all positive responses were indicative of agreement and all negative ones were indicative of disagreement. The questions allowed respondents a degree of freedom in responding, and incorporated the following:

SA: Strongly Agree
A: Agree
N: Neutral
D: Disagree
SD: Strongly Disagree

The results were however tabulated to give a view of the representation of the responses.

Scope, limitations and boundary conditions

The sampling involved only the second year students of the World Maritime University as these, besides the majority coming from developing countries, those in the second year have normally been exposed enough to the concepts which the questionnaire seeks to clarify.

Given that the study is designed to provide some insight into the feasibility of the university's commencing Internet based education delivery, and given the time span of the exercise, it was necessary to limit the opinion poll to the World Maritime University, besides literature review and Internet search for relevant information.

CHAPTER TWO

WEB EDUCATION MANAGEMENT SYSTEMS: AN UNDERSTANDING

2.1 BACKGROUND

2.1.1 THE BIRTH OF THE COMPUTER AND THE INTERNET

It may be worth noting that while today's youth is familiar with if not proficient in the use of computers and the Internet, this was not always the case, as the computer did not exist, at least not the way we know it today, let alone the Internet. Now however, it would be impossible not to take these young technologies for granted given their rapid spread and development. Cisler (2001) wrote "The Internet, the network of networks that was originally created to link weapons research labs in the 1970s, has spread to more than 170 countries. The growth of users and connections, as well as new products and services continues to expand at an explosive rate." Some details on the development of the computer and the Internet are given below

2.1.2 THE BIRTH OF THE COMPUTER

The Abacus, The Pascaline And The Arithometer

The abacus, a manual counting device used to make computations by a system of sliding beads arranged on a rack emerged about 5,000 years ago in Asia Minor and is widely regarded as the precursor of today's computer. It was used by merchants for record keeping of trading transactions. In 1642, Blaise Pascal invented the Pascaline to help his father, a tax collector, with his duties. It was made of brass and rectangular in shape, and worked by using eight movable dials to add sums up to eight figures long. Gottfried Wilhem von Leibniz, a German mathematician and philosopher improved the Pascaline in 1694 by creating a machine that could also multiply. Leibniz's mechanical multiplier also worked by a system of gears and dials and was a result of his having studied Pascal's original notes and drawings. In 1820

Charles Xavier Thomas de Colmar, a Frenchman, invented a machine that could add, subtract, multiply and divide, called the arithometer.

The Difference Machine And The Tabulating Machine

Charles Babbage, in 1822 proposed a machine to perform differential equations, called a Difference Engine, which was powered by steam and as large as a locomotive. It had a stored program and could perform calculations and print the results automatically. Babbage later proposed the first general-purpose computer, which he called the Analytical Engine. Although it was never really constructed, it outlined the basic elements of a modern general-purpose computer. It consisted of over 50,000 components, (see diagram in appendix I) including input devices in the form of perforated cards containing operating instructions and a store for memory of 1,000 numbers of up to 50 decimal digits long. It also contained a mill with a control unit that allowed processing instructions in any sequence, and output devices to produce printed results. The idea of using punch cards to encode the machine's instructions was actually borrowed from the Jacquard loom, which was produced in 1820 and named after its inventor, Joseph-Marie Jacquard, and used punched boards that controlled the patterns to be woven. In 1889, an American inventor, Herman Hollerith also applied the Jacquard loom concept to computing. His first task was to find a faster way to compute the U.S. census. The previous census in 1880 had taken nearly seven years to count. Hollerith developed the idea of recording each person's information (age, sex, and ethnicity) as a pattern of punched holes on a card. As many as 80 variables could be stored on a single card. He designed an electromechanical machine, which could tabulate the information from the card automatically, thereby reducing manual counting and errors relating thereto, as well as the number of persons required to do the counting.

In 1888 Hollerith's system was chosen for the 1890 census tabulation. With one hundred machines operated by eighty clerks who could each process about one thousand cards an hour, the census processing was completed after two and a half years. More than four years processing time was saved off the previous census and

the government saved an estimated $5 million, which was a large amount at the period. In addition to their speed, the punch cards served as a storage method for data and they helped reduce computational errors. International Business Machines (IBM) later acquired his systems in 1924.

The Differential Analyser

Vannevar Bush developed a calculator for solving differential equations in 1931. The machine could solve complex differential equations that could hitherto not be solved by scientists and mathematicians. However, the machine was cumbersome because hundreds of gears and shafts were required to represent numbers and their various relationships to each other. An attempt was made by John V. Atanasoff, a professor at Iowa State College (now called Iowa State University) to eliminate this problem based on the mid-19th century work of George Boole who clarified the binary system of algebra, which stated that any mathematical equations could be stated simply as either true or false. The work was abandoned owing to lack of fund.

2.1.3 MODERN COMPUTERS

The First Generation (1945-1956)

These were a result of the Second World War, when governments turned to computer development to enhance their standings. The result was the Z3 in 1941, which was developed by German engineer Konrad Zuse, to design airplanes and missiles, and the Colossus in 1943 by the British, for decoding German messages. In America, Howard H. Aiken, a Harvard engineer working with IBM, succeeded in producing an all-electronic calculator by 1944, to create ballistic charts for the U.S. Navy. It was about half as long as a football field and contained about 500 miles of wiring. The Harvard-IBM Automatic Sequence Controlled Calculator, or Mark I for short, was electronic relay computer. It used electromagnetic signals to move mechanical parts. The machine was slow (taking 3-5 seconds per calculation) and inflexible (in that sequences of calculations could not change); but it could perform

basic arithmetic as well as more complex equations. The war also resulted in the Electronic Numerical Integrator and Computer (ENIAC), produced by a partnership between the U.S. government and the University of Pennsylvania. It consisted of 18,000 vacuum tubes, 70,000 resistors and 5 million soldered joints, consuming 160 kilowatts of electrical power. It was developed by John Presper Eckert and John W. Mauchly, but unlike the Colossus and Mark I, was a general-purpose computer that computed at speeds 1,000 times faster than Mark I.

Von Neumann (University of Pennsylvania) designed the Electronic Discrete Variable Automatic Computer (EDVAC) in 1945 with a memory to hold both a stored program as well as data. This stored memory technique as well as the conditional control transfer that allowed the computer to be stopped at any point and then resumed, allowed for greater versatility in computer programming. Its key element was the central processing unit, which allowed all computer functions to be coordinated through a single source. In 1951, the UNIVAC I (Universal Automatic Computer), built by Remington Rand, became one of the first commercially available computers to take advantage of these advances.

First generation computers unfortunately had a limitation of being of being inflexible and difficult to programme owing to their having been designed for particular task(s) by the operating instructions with which they were made, as each computer was operated by a different binary-coded program called a machine language. Again, they used vacuum tubes - which meant that they had to be large - and magnetic drums for data storage.

The Second Generation (1956-1963)

The transistor, which was invented in 1948, replaced the large, cumbersome vacuum tube thereby reducing the size of electronic machinery. The transistor was incorporated into the computer in 1956. Coupled with early advances in magnetic-core memory, transistors led to second generation computers that were smaller, faster, more reliable and more energy-efficient than their predecessors. Examples are the early supercomputers; Stretch by IBM and LARC by Sperry-Rand. These computers, both developed for atomic energy laboratories, could handle an

enormous amount of data, a capability much in demand by atomic scientists. The machines were costly, however, and tended to be too powerful for the business sector's computing needs, thereby limiting their attractiveness. Second generation computers replaced machine language with assembly language, allowing abbreviated programming codes to replace long, difficult binary codes. By the 1960's, computers already contained all the components we associate with the modern day computer: printers, tape storage, disk storage, memory, operating systems, and stored programs. By 1965, most large businesses routinely processed financial information using second-generation computers.

It was the stored program and programming language that gave computers the flexibility to finally be cost effective and productive for business use. The stored program concept meant that instructions to run a computer for a specific function (known as a program) were held inside the computer's memory, and could quickly be replaced by a different set of instructions for a different function. A computer could print customer invoices and minutes later design products or calculate paychecks. More sophisticated high-level languages such as COBOL (Common Business-Oriented Language) and FORTRAN (Formula Translator) came into common use during this time. These languages replaced cryptic binary machine code with words, sentences, and mathematical formulas, making it much easier to program a computer. New types of careers (programmer, analyst, and computer systems expert) and the entire software industry began with second-generation computers.

The Third Generation (1964-1971)

Transistors no doubt were an improvement over the vacuum tube, but they still generated much heat, which damaged the computer's sensitive internal parts. The quartz rock eliminated this problem. Jack Kilby, an engineer with Texas Instruments, developed the integrated circuit (IC) in 1958, which combined three electronic components onto a small quartz silicon disc. Scientists were then able to fit even more components on a single chip, called a semiconductor, reducing the size of computers even further. Another feature of the third-generation computers was their

capacity to run many different programs at once by the use of an operating system that monitored and coordinated the computer's memory.

The Fourth Generation (1971-Recent)

By the 1980's, hundreds of thousands of components could be accommodated on a chip half the size of a US dime, by the use of very large scale integration (VLSI). Millions could be achieved by Ultra-large scale integration (ULSI). The result was further reduction in computer size and increase in power, efficiency and reliability. The Intel 4004 chip, developed in 1971, took made it possible to locate all the components of a computer (central processing unit, memory, and input and output controls) on a tiny chip, which now permitted multifunction programming, meaning that such condensed power granted even lay people the opportunity to harness a computer's power, even for household items like microwave ovens, television sets etc. By the mid-1970's, computers were available with user-friendly software packages that offered even non-technical users an array of applications, most popularly word processing and spreadsheet programs. The number of personal computers in use rose from 2 million in 1981 to 5.5 million in 1982 and 65 million in 1992. Computers continued to decrease in size, from desktop to laptop computers (which could fit inside a briefcase) to palmtop (able to fit inside a breast pocket). In 1984, Apple's introduced it's Macintosh line, which offered an operating system that allowed users to move screen icons with the aid of a mouse, instead of typing instructions.

The Fifth Generation (From Now)

Fifth Generation Computers are already present. This class of computers is characterised by Artificial intelligence (AI) and are designed after the principles of human thinking. Features including modern input/output devices such as voice, pen and pointers, which may soon replace keyboards, are amongst those expected to catapult the IT revolution. Present day technologies enable computers to accept spoken word instructions (voice recognition) and imitate human reasoning. Other advances include parallel processing, which replaces von Neumann's single central

processing unit design with a system harnessing the power of many CPUs to work as one, and superconductor technology (an element, inter-metallic alloy, or compound that will conduct electricity without resistance below a certain temperature thereby eliminating energy loss hence greatly improving the speed of information flow). Computers today have some attributes of fifth generation computers. For example, expert systems assist doctors in making diagnoses by applying the problem-solving steps a doctor might use in assessing a patient's needs.

2.1.4 THE BIRTH OF THE INTERNET

The Advanced Research Projects Agency (ARPA), the U.S. government's research agency for all space and strategic missile research was a response to the Soviet's launching of Sputnik in 1957, in a spirit of copetition. ARPA's focus shifted to computer science and information processing upon the formation of NASA in 1958 and one of it's goals was to connect mainframe computers at different universities around the country so that they would be able to communicate using a common language and a common protocol (An agreed-upon format for transmitting data between two devices) which can be implemented in either the soft or hardware. This then resulted in the ARPAnet's becoming the first multiple computer network, in 1969. The original ARPAnet eventually grew into the Internet, on the basis that there would be multiple independent networks.

Between 1968 and 1969, with the assistance of some colleagues, Larry Roberts, the ARPAnet's original architect commenced work on building IMPs (Interface Message Processors), which would connect the individual sites, route messages, scan for errors, and confirm the arrival of messages at their destinations. The University of California at Los Angeles, the University of California at Santa Barbara, the University of Utah, and Stanford Research Institute were the first sites used, and connections were later made to other people involved in the project, forming the precursor of today's Internet.
In 1971, the Network Control Protocol (NCP) replaced Telnet, which in itself was a

quickly formulated system for logging on to remote sites. Later in the year, nineteen other sites across the country joined the ARPAnet. In 1977 TCP (Transfer Control Protocol), a faster, easier to use, and less expensive protocol was introduced and the In 1978 IP (Internet
Protocol) was added, and so the Internet was born.

2.2 INTERNET AND EDUCATION DELIVERY

Muirhead (2002) noted that the interconnectivity of the Internet presently supports close to 290 million domain servers or hosts, and about 490 million users with a potential of 4.3 billion IP addresses. This is very true, and so is the fact that the Internet presently serves as a portal of exchange of information in all facets of human endeavour and as it remains un-governed, its use is open for any and every purpose from communication to business and advertising and even pastimes such as gaming and chatting, and indeed to education. According to Garrison (1989) "Computer mediated communications technology not only has the ability to transmit information but it is becoming more capable in promoting acquisition and understanding…Education, and especially distance education, is not exempt from the computer/communications revolution". The facilities provided by the latest achievements in information technology have in the most recent years imposed themselves as a necessary support for education delivery (Beizadea and Udrea, 2000, p.182). The educational sector is therefore better equipped now more than it ever has, for the task of bringing literacy in all its forms to the global populace.

The capacity of the Internet to reach such an amazingly large population means that it can achieve a great deal of tasks that require such a large reach, probably second only to television, probably even more efficient, given that the Internet after-all operates on *one single channel*- at any point in time, every web page is available to the millions of connected users irrespective of the location/s of such user(s).

With the rise of the Internet the distance-learning experience has been completely transformed. Today, new developments have begun to obviate many traditional and

once principal approaches to education, and the use of distance learning processes is taking a prime position in education delivery, and indeed in maritime education and training, and the conveyor belt is undeniably Information Technology. In the past, distance learning was largely a lonely experience, in which the student was confronted with a pile of mailed learning material and sporadic and structured interaction with a tutor who was not always within easy reach. In this kind of world, the student not only had to overcome a number of difficulties to interact with the tutor, but he/she also faced extended periods of time between the sending of a request and receiving a reply. Furthermore, interaction was restricted to that between individual students and their tutor, since no type of communication existed with other students. The development of, and access to information and communication technology infrastructure determines the appearance of virtual institutions (Farrell, M.G 1999)

In contrast, the Internet constitutes a virtual classroom in which intense interactivity and the sharing of resources and information constitutes its essence. This is not to say that there were no virtual classes before the rise of the Internet. For some years, a number of educational institutions struggled to develop and sustain distance-education programmes that were designed for teleconferencing systems. The extremely high cost of the service, however, constrained its growth. For most developing countries, the technology was far beyond their reach. A selected few were able to implement the system in a limited fashion for a small elite. Furthermore, the need of real-time presence made the system quite rigid and not very adequate for a time in which flexible education hours are crucial.

It is perhaps at the higher education levels where the Internet may be most effective. Obtaining a university degree through distance learning is already an established practice, with possibly the most well known example being the Open University in the United Kingdom, which has more than 200,000 students. There are numerous other Open Universities or institutions offering degrees via the Internet. A lot of examples also exist for maritime education and training, including the Australian Maritime College, the North West Kent College (UK), etc. Ellsworth (1994, p.204) summed up the future of Internet-education romance thus: “The future of the

Internet and higher education is a bright one: the challenges are numerous. Expect increasing use of Internet for teaching and scholarship, both for faculty and students. Alliances of researchers will no doubt become even more common. Expect the unexpected, too" Internet Based Education (IBE) is therefore a concept that will soon have its effects on practically all human vocations and associations. Cwilewicz and Tomczak (2000, p,132) concluded that teachers quickly begin to create new ways of structuring training in order to accommodate the educational programme to their actual needs once they learn to use effective and well-designed CBT programmes.

2.2.1 ATTRIBUTES: FEATURES TO BE HARNESSED

Student-teacher and student-student interaction actually are the basis of education, and while distance learning in the past could only achieve the former, the present Internet capabilities also make student-student interaction a reality. The main time-defined interaction in education delivery and indeed in web based delivery are grouped into:

- Asynchronous Interaction– where learner and instructor and indeed fellow learners transmit messages only in one direction (sender-receiver) at a time and response is received after a time lapse, as in the use of e-mails, discussion board, digital dropbox, etc. Asynchronous interaction provides
    1. Freedom of time, so that learners participate when, and if, they choose
    2. Time for reflection
    3. Opportunities to research and backup one's assertions
    4. Allows global communication, un-bounded by time zone constraints
    5. Greater anonymity and potential lack of responsibility by individual users.

- Synchronous Interaction– simultaneous transmission of information between sender and receiver with immediate feedback, as in the use of chat rooms, audio and video conferencing, etc. Synchronous communication provides:
    1. Immediacy
    2. Faster problem solving, scheduling and decision making
    3. Increased opportunities for developing affect
    4. Better for class parties

2.2.1.1 TOOLS AND LECTURE MATERIALS: MULTIMEDIA TOOLS AND TECHNOLOGIES – BASIC DEFINITIONS

Computer-Mediated Communication

Also referred to as CMC, this is a generic term now commonly used for a variety of systems that enable communication between and amongst people by means of computer and networks such as computer conferencing, electronic mail, discussion lists and bulletin boards to name a few. The applications to education and training are numerous. McAteer and Harris (2002) have commented:

> The core activity of Computer-mediated Conferencing (CMC) involves individual members of a learning community composing text at a computer that is networked: the text may be read and responded to by others in that community, wherever they are and whenever. Contributions are held on an archived network. Participants read and respond to items as they choose, or as procedures agreed within the group require. The effect is a kind of unfolding, written conversation. Software packages for CMC differ enormously, both in the way they look and 'feel' as tools for communication,

and in the degree of freedom they allow for user modification, control and access. New users of CMC (student or teacher) predominantly experience a sense of novelty. This can be positive in terms of interest and motivation, or negative in terms of lack of familiarity. Using CMC for learning and teaching may not come naturally to even those students and teachers who are 'browser literate' and for whom email has long been a comfortable resource.

Teleconferencing

This is a system enabling simultaneous interaction amongst persons who are separated by geographic distance, with visual inputs. Choosing a conferencing medium will be cognizant of design and delivery needs and should “optimise the interaction that takes place during the conference and create an atmosphere which focuses on the importance of the individual, overcomes distance by generating group rapport and presenting what is to be said in such a way that it will be received, understood and remembered” IDE (2002). The requirement for this on the Internet is streaming video capability for all parties involved in the conference.

Audio Conferencing

This is voice-only communication. Even though it lacks a visual dimension, it has some major strengths. Its system requirements are not as high as that required for video conferencing and slower or lower capacity systems can very well support this. The conference can be set up at short notice and is relatively inexpensive. The simplest form is a call involving three or more persons at two different locations. For multipoint conferencing amongst three or more sites, an audio bridge is required to enable clear interaction between/amongst sites.

Audiograhpic Conferencing

Jegede et al (1996) stated that “Audiographics conferencing is the transmission of images and text between two or more computers using standard telephone lines.” The basic function is therefore the transmission of graphic and written material. It adds a visual element to graphic conferencing while maintaining the flexibility and economy of using telephone lines. Audio teleconferencing is now combined with written, print, graphics, and still or full motion-motion video information.

Chatting

Chat rooms are a common feature of the Internet and indeed education delivery software. Chatting is a synchronous communication mode where persons hold discussions using text. Dedicated chat rooms normally have guiding rules as to the use of language, etc, and others are dedicated to particular subjects. Chatting can involve two persons and can also involve a large population. They may also be available only to certain authorized persons. The basic feature here is the ability to address issues, raise queries and get immediate responses. Presently, chatting is no longer limited to written text, but may also involve audio and video chats.

Digital Dropbox

According to Okonna (2001, p.30)

> The digital ‘dropbox’ is a tool that allows file exchange between participants such as the instructor and students in an online learning environment. The ‘dropbox’ works by uploading a file from a disk or computer to a central location. A participant can then download the file to work on locally. The student can download the file, work on it and send it back to the instructor for record keeping, grading or comments. The drop box tool is useful in administering assignments and other task related activities.

Using this feature, more can indeed be accomplished online between the student and instructor. Pieces of a dissertation can be submitted for comments and retrieved after the supervisor may have dealt with it, the student is able to evaluate a course

by simply downloading a questionnaire, appending responses as appropriate, etc. It indeed is a versatile tool.

Full-Motion Video Teleconferencing

Satellite technology brought about the popularity of this mode of communication that both remote and urban schools and businesses consider so valuable for their students and employees as to make the investment in satellite hardware. Full motion video uses fibre optics cables, which can carry a tremendous amount of video, data and graphics into the school through a single cable. A single fibre-optic cable can carry over a billion bits per second, enabling several video teleconferences to run simultaneously at high transmission speeds without signal degradation over distance as is experienced with coaxial cable.

Electronic Mail

Commonly referred to as e-mail, is condisered by many as indispensable. E-mail is the simplest as well as the most widely used Internet tool (Moody,1996,p.49). marketingterms.com defines it as “The transmission of computer-based messages over telecommunication technology.” while netforbeginners.about.com described it as “electronic mail, or mail sent from one computerized device to another”. It was one of the first uses of the Internet and remains still the most popular. E-mail incorporates a major attribute of conventional letters in that besides the message it conveys, it also contains the address of the recipient as well as that of the sender.

Interactive Calendar

This is a tool used for preparing a programme of events, and can be managed by more than one person by simply copying and editing. The calendar can be programmed to prompt the participants of the events of the day etc, in much the same manner a quote of the day is propped up by the Microsoft Office Assistant, upon logging in. Each participant can post events spanning more than one day with

the text flowing across days or weeks, and events can even reoccur occasionally, for instance every other day, every first Monday of the month etc.

Netmeeting

This is actually a product developed by Microsoft Corporation that enables groups to teleconference using the Internet as the transmission medium. NetMeeting supports Voice on the Net, chat sessions, a whiteboard, and application sharing. It is built into Microsoft's Internet Explorer Web browser.

Project Area

More especially in activities involving extensive work or the need for continuous sharing of files, documents etc, an online project area may be created by any one of the participants. It serves as a good forum for discussion amongst persons working on the same or similar project.

Video Conferencing

This is a mode providing interconnection between two or more persons with audio and video. Of this, Coventry (1997) wrote:

> The term videoconferencing is a confusing one. Some commercial companies…are now advertising “videoconferencing" as a new technology. The fact is that videoconferencing is a function which can be hosted on a variety of technologies and has been for some years. It is not a technology in itself. In America, the term is fast becoming defined as any use of television to join people in some live interaction. However, the term is actually applied to a wide range of situations from live video lecturing to large audiences, to a point-to-point, individual-to-individual desktop PC chats. One possible categorisation is into large scale and small scale. The majority of large scale

set-ups are currently satellite-based in the form of “interactive television” i.e., one-way video, two-way audio. This allows for broadcast from a central point to many different locations regardless of distance. Small scale refers to compressed video for meetings between relatively few points for small meetings. A technology used for this function is ISDN. ISDN promises to make two-way video equally as cost effective, with potential for greater interactivity.

Virtual Classroom

Simply defined, a virtual classroom is an online environment where the student has facilities duplicating the real classroom environment. Text, images and sound are utilized for both synchronous and asynchronous lecture delivery on the Internet. Many and indeed all internet delivery tools can be incorporated into the virtual classroom.

Virtual Reality

Tech Encyclopedia defines this as:

> An artificial reality that projects you into a 3-D space generated by the computer. A virtual reality system uses stereoscopic goggles that provide the 3-D imagery and some sort of tracking device, which may be the goggles themselves for tracking head and body movement, or a "data glove" that tracks hand movements. The glove lets you point to and manipulate computer-generated objects displayed on tiny monitors inside the goggles. Virtual reality (VR) can be used to create an illusion of reality or imagined reality and is used both for entertainment and training. Flight simulators for training airplane pilots and astronauts were the first form of this technology,

which provided a very realistic and very expensive simulation. Virtual reality has other variants. Spatially immersive displays use multi-sided rooms that you walk into, and an "immersive theater" or "immersive wall" uses a large flat or curved screen (8-24' long) that completely fills your peripheral vision. Desktop virtual reality (desktop VR) uses a personal computer to play games and view environments that you move around in, although they lack the 3-D reality of true VR systems.

A typical example of this is the computer based marine simulation which is now made possible by high capacity connectivity, and the full mission marine simulator, where though goggles are not worn, the participant is totally immersed in the voyage scenery which can often be so convincing as the participant believing that the situation is real life, and acting thus. Horton (2000, p.91) “VR [Virtual Reality] presentations provide a realistic computer-based experience of a place or object by providing images and controls that allow users to move about or otherwise manipulate their environment.”

Visual Imagery

Like the famous Chinese proverb that says that one picture is worth ten thousand words, visual imagery improves the learning impression by the use of pictures and even videos of the subject of learning. According to Horton (2000, p.91), a carefully arranged VR presentation of imagery and sound can allow your students to “visit “ an otherwise inaccessible location. According to The School Improvement in Maryland, “Teachers who teach concepts, rules, and other material to students through the use of imagery techniques promote learning because visual imagery enhances the recall of key ideas and increases comprehension.”

2.3 AVAILABLE ON-LINE EXAMPLES

2.3.1 SERVICE PROVIDERS

Several offers exist on the Internet for online learning solutions for schools and individuals, and a few of the portfolios advertised are presented below.

Boxmind

Boxmind.com offers what it calls “A revolution in Education”, which it offers for individual or institutional subscription. On the site, the typical lecture interaction page is displayed, with features including: Full motion video & audio stream encoded in Windows Media Player format; A lecture “contents page” along with a selection of relevant web links from the Boxmind Online Library; Fully synchronised charts, illustrations, animations and other visual material used in the manner of an advanced OHP; A fully synchronised transcript, complete with embedded “active footnotes” providing further evidence and background research. Boxmind offers a fascinating demo video lecture that incorporates two screens, one for the video and operational buttons, another for pictures and texts that respond to the various portions of the lecture.

Blackboard

Blackboard.com on its own displays three basic packages in what it calls *Blackboard e-Education Enterprise Suite including*:

Blackboard 5: Learning System: This is basically a customizable tool for course management, allowing for integration with student information systems. It stated features including Course management, interoperability and customization, Advanced integration and system management.

Blackboard 5: Community Portal System: For management of the online academic environment, unifying academics, commerce, communities, and administrative services online through one integrated interface, capable of managing very large populations.

Blackboard Transaction System: For Student identification, dining services, campus commerce, building access, and increases in business with off-campus merchants. Further, the site states, on the Transaction System, that: Blackboard provides transaction processing systems to colleges, universities and corporations, and that more than 450 clients rely on Blackboard's debit account systems to deliver convenient, secure and efficient campus auxiliary services to students, faculty and staff.

This is therefore a good example of a system that goes beyond simply supporting e-learning, but also managing the institution.

Webct

Webct.com offers the following:

Campus Edition (Course Management System) WebCTs course management for institution-wide delivery of online education. According to WebCT, It is a teaching-learning tool supported by customization and personalization capabilities, student performance tracking features, content management, and scalable standards-based technology.

WebCT Vista (Academic Enterprise System): This is a tool that in addition to providing individual course management, is capable of "providing higher education institutions with an extensible, enterprise-class e-learning system that mirrors their existing structure, operations, and workflow" WebCT. WebCT offers plug-ins for 10 languages, including Czeck, Dutch, Finnish, French, German, Italian, Polish, Portuguese, Russian, Spanish, and UK English.

2.3.2 GENERAL EDUCATION

Manhattan Virtual Classroom

According to the website,

> The Manhattan Virtual Classroom is a password protected, web-based virtual classroom system that includes a variety of discussion groups, live chat, areas for the teacher to post the syllabus and other handouts and notices, a module for organizing online assignments, a grades module, and a unique, web-based email system open only to students in the class…Manhattan is free (http://manhattan.sourceforge.net/)

The Manhattan Virtual Classroom was developed at Western New England College and is an example of an online system deigned to augment the traditional classroom system. The website wnec.edu/ has more details on the Western New England College, which also runs a continuing education system called WNEC Online, offering 18 undergraduate and graduate courses for the summer of 2002.

University Of Connecticut Virtual Classroom.

On its website are links to about 24 courses for the current semester, basically in the sciences. It employs a web development lab tagged Web Development Lab UConn WebCT, apparently with the aid of WebCT (described above). The University of Connecticut Web Development Lab is equipped with a range of multimedia software and Power Macintosh computers, and is available to UConn students, faculty and staff, providing consulting, training and reference materials.

Tech21.

This is a collaborative effort in USA, of the National Centre of Adult Literacy (NCAL), University of Pennsylvania/Graduate School of Education, focuses on adult education. www.tech21.org/ states inter alia:

The central goal of TECH21 is to use the best of what information technology can offer to assist all adults to achieve their adult education and life goals. The project will bring together technology, teachers, and adult learners by doing the following:

Develop and test models for virtual learning

Identify and document promising practices

Develop and test training components and professional development modules

Coordinate project activities and findings with federal and OVAE-funded adult education and technology projects

Develop and implement an information and learning portal

Westwood Online

Westwood offers Bachelor's degree programmes in Computer Network Management, E-Business Management, Visual Communications, and Associate degree programmes in Computer Network Engineering, Graphic Design and Multimedia,:
The approach here is a complete educational package of online learning with no classroom component though the college runs other programmes that are traditionally delivered.

The University Alliance

This, in the United States is actually a collaboration of Bisk Education, Villanova University, Jacksonville University, Regis University, University of South Florida, and Saint Leo University. The alliance offers a wide range of courses online, leading to awards from certificates to master's degrees.

The Open University

This is probably the largest online university, and operates from the United Kingdom. Though the university emphasises that it has no intentions of an online university, its claims about its online achievements are amazing. “The following statistics demonstrate the OU’s extensive experience in production and delivery of large scale e-learning:

- About 160,000 OU students and their tutors are online, using the university's email conferencing system to contact each other and have online discussions via their PCs;
- 80,000 OU assignments – one in ten of all assignments – are submitted electronically;
- 178 university courses require the student to have online access (for delivery of course materials, study support, etc); a further 97 allow the student to use online services if they wish.
- 773,000 CD-Roms, 30,000 floppy disks and 3,000 DVDs were produced in 2001.
- 32million pages on the university's Courses and Qualifications website were accessed in 2001;
- 3.5million page hits on the university's Learner’s Guide were made in 2001;

2.3.3 MARITIME EDUCATION

Australian Maritime College (Amc):

Both the faculties of Maritime Transport and Engineering and Fisheries and Marine Environment offer distance-learning courses. According to the site, AMC offers a Certificate in Maritime Business, Graduate Certificates/Diplomas in Business (Shipping) and (Port and Terminal Management), Master of Business (Maritime Management), Master of Business Administration (Maritime Management) and Graduate Certificate (Fisheries Management) by distance education. The college arranges scheduled teleconferences.

The Open Learning Unit Of The Centre For Advanced Maritime Studies.

Located in Scotland, this is another institution offering courses by Distance Learning. It has the following on offer:

> A two year distance learning programme in the Management of Ship Operations (MSO) suitable both for sea staff and shore staff involved in marine operations is the main course offered. Over and above the two year MSO programme the Open Learning Unit also offers a short three month distance learning course on the IMDG Code. In addition, the Centre is now able to offer specially tailored company training programmes based on selected elements of the MSO and DGS courses to suit the training needs of particular companies.

Cisear

According to CISAER, which provides surveys of course provisions on the web, The Consortium, HØgskolen I TromsØ offers "Maritime topics within the FUMAR concept".
The concept was reported as 3 courses with students numbering 60. Muirhead (2002b, p. 28) reports the project "12 certificate of competency subjects, such as navigation, GOC and tanker safety, are offered by a consortium of four Norwegian MET institutions"

2.4 ADVANTAGES AND SHORTCOMINGS

Given that Web education is in itself remote learning, the advantages and shortcomings of remote learning apply, though some of the shortcomings may have been ameliorated or buffered by the use of the ever-exploding developments in information technology. Truly, there is no exhaustive list of these advantages or

shortcomings, more especially as certain features of proximal learning may be of no consequence to certain subjects or modes of knowledge acquisition, a typical example being that no proximity to lecturer or instructor is necessary for home reading.

Again, the advantages of web education may be irrelevant to some forms of skill acquisition, an example being the proficiency to be attained by consistent sessions of mooring the ship to the bollards. For these reasons, certain advantages accruable in some forms of learning are not applicable in other forms, and certain shortcomings in some areas will hold no weight in others, hence a list of advantages from any forum or viewpoint my be rather incomplete when viewed from another, and may be bogus when viewed from another still. Below, some observed advantages and shortcomings are highlighted, while in the following chapter a closer look will be given to certain of the highlighted items.

2.4.1 ADVANTAGES

- The learner does not in incur travel expenses, which are a large percentage of study costs. According to about.com, (2002), “Many corporations have found that online training can be more efficient. There's no travel time or expense; individual employees can take just the courses they need and immediately apply their new learning on the job” Those willing to remain on the job therefore suddenly are able to eat their cake and have it. There are other derivable advantages from these; for instance, online training will ultimately help the bottom line by shortening training time and offering substantial savings.
- Persons who have lost their jobs especially owing to mergers and sell offs can be retrained or take refresher courses on a part time basis. This viewpoint is not limited to this class of persons; many people can indeed not afford to be full time students for a variety of reasons, and online learning therefore presents the opportunity to work while learning their fees, or engaging in those things that would normally not permit study. This view is supported by Muirhead (2002b, p.2) “Flexible Internet based learning allows studies to be fitted to individual lifestyles”

- Web based learning is easily customised, thereby enhancing rapid updating of the course content and indeed the class. The class makeup in a traditional setting is fixed. Online, one can basically start anytime, in most cases.
- It has the potential to link many sites or students simultaneously and is accessible to a vast range of information and data at a relatively low cost of distribution. These are of course, very serious limitations of the traditional mode of education. (Hong et al, 2001)
- The subtle yet often incapacitating recurring scenario of classroom unavailability or clashes is easily eliminated as online learning obviates the use of the conventional classroom, given that the classroom is now in the home (or office) of the student, so is the inability of a student to take two courses owing to time table clashes.
- The use of online instruction adds flexibility, some elements of which have been mentioned. There is however the added advantage of the ease with which the online classroom can assess and be assessed.
- The average student on the web feels he/she is studying on the globe, and finds the classroom a much bigger one, even if the number of students is not very large. The online classroom therefore supports the flow of communication and the sense of community. Interaction is therefore extended, making students' thinking more visible. The Internet helps students release emotions, motivates them and engages them as well. It is easily the best opportunity ever made available to some students (Ellsworth 1994, p.5). The student is also given more time for reflection.
- Certain features provide structure and unity to the course while empowering students - for example, the online student often has access to the grade distribution of the entire class. Provision of early feedback to students on their progress is a strong point of WEMS Muirhead (2002, p.2a).
- The student takes an independent and mature approach to learning. In this vein, Rowntree (1992b, p.234) itemized advantages to include; "learners taking responsibility for their own learning; learning alone in small groups; learning at their own pace and in their own time; learning from materials; use of audio-visual media; active learning rather than passive; self-assessment;

a more individual-centred role for teachers; learning from other people besides teachers; plenty of hype"

- According to Race (1989, p.143)

> A key characteristic of open learning material is that the user is kept active. In text-based packages, there is rarely a double-page spread that isn't broken by something for the learner to do. In computer-based systems, the learner is kept even more active – usually in decision–making mode of some form. The bottom line here is that the learner is unlikely to be bored and is especially stimulated by the feeling of being involved in the entire process.

- The availability of email and other online communication tools gives improved and ready access to tutor in that in the traditional learning environment, the student had to see the tutor face to face in other to interact, and this may require several visits to the tutor's office. Presently however, a question arising at the oddest hour thousands of miles away can be asked and responded to spontaneously.
- When Internet video technology is employed, the visual cues that some teachers so depend on to enable him adjust the course delivery to meet the particular needs of a class in session are restored.
- Outside speakers who are needed to make a course delivery but who may not be available owing to the constraints of distance or time are more easily incorporated into the web learning system. The opportunity for students to learn more from more diverse and specialized instructors is therefore enhanced.
- The school employing distance learning and indeed web-based education is able to reach a much wider student population than the traditional approach. The school can as a result, "Link students from different social, cultural, economic, and experiential backgrounds" Gottschalk (ed.)(2002)
- Certain courses are normally not available in the traditional setting owing to low enrolments and non-availability or inconsistence of instructor(s). Web

based education breaks these barriers and makes such courses easily available.

- In the classroom, video and graphic use is not a very common tool. Web education however has the flexibility to incorporate these in the form of high-resolution graphics and colour pictures etc, especially where they help in the instruction. The result is a study environment that is both exciting and stimulating.
- There is the projected advantage of expansion and improved productivity without necessarily increasing cost of delivery, especially after the initial phases of a web learning project has been concluded.
- WEMS improves the quality of learning experiences, given its highly student-centred approaches and well prepared learning materials and this is further enhanced by the motivating interactive activities. Okonna (2001, p. 14).
- Race (1989, p.142) affirmed that consistent and involving exposure to open learning gives us a sharper focus on the qualities of good communication. This is especially true where the instructor deals with quite a number of learners who are learning with a second language, in which case the clarity of terms and expressions in the simplest forms is vital.
- Thorpe and Grugeon (1987, p.3) emphasized that open learning causes a shift from teaching and instructional design towards learning and the particularity of individual student response.

2.4.2 SHORTCOMINGS AND CHALLENGES

- In many parts of the world, there is simply no access to networks and in many others the cost of access is prohibitive. A related factor is the amount of bandwidth that can be assessed, which determines the possible information and communication technology applications. Farrell (1999). The implication is that the reach may be limited by the available technology in the particular locations, hence developing nations may not benefit so much from web education.

- Web education may be discriminatory in learning rates or even learning at all. Muirhead (2002a, p.1) asserted that students without good IT skills are easily frustrated by the demands of the systems.
- Given that WEMS is on-screen, it poses a disincentive to many students who would rather read from printed matter, especially given that printing and downloading files is a lengthy process.
- Technical considerations, administrative problems and the time required to put a course on-line make it a rather slower mode of instruction especially in the early stages.
- Though flexible, the case is not always so when they have been designed for a specific purpose, as such programmes are not easily customisable and impose pedagogical rigidity.
- Some web education tools require a lot of extra time for implementation and management, taking up more man-hours and demanding increased specialization. Rowntree, (1990, p.261) stated “Experience in the Open University suggests that between two and four months of professional time are needed to produce a CAL exercise that will engage learners of varied ability for one hour”. CAL is an acronym for Computer Assisted Learning. He also added that similar estimates have been heard from commercial computer organizations, and that producing computer based interactive video is even more time-consuming.
- A basic consideration is given to the fact that good traditional teachers are not necessarily good online teachers. The consequence is additional training in IT skills or an additional hand for the purpose. Again, some teachers are traditional, believing that education should be teacher centred, and are therefore against web education, which supports a student centred educational system.
- Where technology is not very well harnessed, the rate of drop outs will be higher owing to a lack of physical interaction and communication with other students, resulting in loss of interest. This also dampens the capacity to understand lectures.

- WEMS imposes an additional problem arising from the overwhelming results that are obtained from Internet searches, reducing the student's effective time and creating difficulty in getting optimal results from such searches.
- The proliferation of the Internet has led a lot to doubt the value of the awards obtained from web education and their recognition.
- On assessment, the author, while assisting to evaluate a service provider in a study carried out by Okonna (2001), observed that while answering questions in Lecando, the student could easily switch between the question/answer window and the tutorial window and source for the answers. The author was actually able to keep both windows open simultaneously. This and other loopholes make assessment by computer subject to questions of reliability.
- Given that teachers are role models for students, the separation gives web education the disadvantage of not granting the opportunity for the student to have interpersonal improvements alongside academic learning.
- Copyright restrictions on the use of instructional products and materials do not promote sharing through collaborative inter-institutional arrangements or through broad international delivery models. Farrell (1999). The implication is that some educative materials are not available for on-line education, and these copyrighted materials incidentally often are of good quality.

Furthermore, the Conference; Distance Learning and the Internet: Discussions: Are Schools Ready for Distance Learning and the Internet? A Conference at the University of California, March 8 -10 2000, made the following general points as vital considerations for against Internet based education:

- Lack of infrastructure is a big issue: some campuses centralize support; others have very decentralized approaches; some schools outsource support completely.

- Scaling program from traditional 25 to 30 students class size to handle potential enrolments of 200 300 is a major issue

- Most of the institutions represented were targeting adult learners pursuing graduate, professional degrees or training
- Some faculty embrace the Internet and distributed learning; others resist; individual faculty can create some good distance learning courses, get the ball rolling and demonstrate possibilities. Offering a DL degree program means moving to a whole new level; need breadth of participation - the whole unit needs to be onboard; this requires support from the dean.
- Distance learning tends to grow program by program within an institution; not all are active. Rewards and motivation to develop DL classes differs among the various academic fields at different institutions.
- It's important to personalize the class. Students want contact with the professor and each other; particularly like to meet one another; want to personalize the class and contact, not all virtual.
- It is important to have time limits on course completion; if completion is open ended students miss the interaction among their peers and don't develop a sense of community; need limits, but does not have to be a 15 week semester.

2.5 SUMMARY

The computer and the Internet have come a long way, and the developments have taken years, innovativeness, consistency, money and effort. The combination of both has made it possible to do a great deal of things that were not imaginable a few decades ago, and that includes their use for real time learning either as supplementary to onsite learning or as tools for remote learning.

The use of the computer and the Internet for education delivery is practically unavoidable, and holds a lot of advantages presently and prospects for the future, but certain hurdles still have to be surmounted. Some of these involve minor adjustments while others will take time, money and major modifications. In some

cases, the human must be re-oriented. Judging however by the hitherto seemingly impossible developments that have so far been witnessed, it will be entirely myopic to consider that these hurdles will remain for long.

CHAPTER THREE

THE SYSTEM-LEARNER INTERFACE

3.0 THE SYSTEM-LEARNER INTERFACE

It is easily understood that the advertisement for a product is best done by the product itself, in that a poor product does indeed not get a second trial. A number of challenges facing the use of the Internet for education delivery have been itemised in the previous chapter. In the following pages, an examination of the efficiency of the Internet as a training tool is made, in view of factors relating to the nature and quality of the tools in use, the substance and presentation of the material and the user of the final product.

Materials for remote instruction are to help carry out all the functions that a teacher or trainer would carry out in the conventional situation, like guiding, motivating, intriguing, expounding, explaining, provoking, reminding, asking questions, discussing alternative answers, appraising each learner's progress, giving appropriate remedial or enrichment help, etc. (Rowntree, 1990. p11). There are therefore two sides to the distance/Internet learning coin; the above conditions are either met or they are not.

3.1 OUTREACH EFFICIENCY- WEB EDUCATION QUALITY

It is the degree to which Rowntree's conditions above are met or not, that determines where to place the online programme on the quality score sheet. The key question to ask then will be if the remote/online learning experience is a good enough replica of what the learner would have if he/she were doing the learning in the school. If this be the case, then the remote learning system is worth sustaining. In view however of the several advantages of remote/online learning itemised in the previous chapter, the onus rests on the academe to wrest Internet Education from the doldrums of mediocrity, as continuous comparison to traditional delivery methods makes it. In the words of Sewart et al (1988, p.158):

> …students are probably driven to abandoning many courses which correspond to their aptitudes and tastes for the simple reason that it is impossible to reserve a teacher for their needs alone. Now distance teaching is in a position to offer the service of a specialised teacher…distance teaching is in fact the only appropriate means at our disposal to complete and enrich the range of the educational programmes of formal teaching.

Internet Education, with its numerous technological advantages, can therefore not only be as good as traditional instruction methods, but indeed has the potentials of being a better option. In other words, the beneficiary of WEMS can as well have a better and more profitable learning experience than his/her counterpart in the traditional setting. According to Navassardian et al (1995, p.109) "Computer resources are a valuable aid in solving the complex problems facing the educational process". Their viewpoint here, which indeed is true, is that computer based education is a solution to the limitations of traditional instruction. It therefore expectedly should be better. They further added that CAI (Computer Aided Instruction) has a major purpose of reducing the cost while increasing the efficiency of tutoring. Wishart and Blease (1999, p.25) concluded, upon experiments in a school, that the installation of a computer network results in improved teaching and learning and increased enjoyment of learning in the school with the students and teachers concluding that the use of IT is beneficial to learning.

However, like every system that is dependent upon varying factors for its efficiency or quality, and especially given that the quality of education is a vital tool for its prosperity and clientele or patronage, WEMS comes under the disadvantaged position of this dependence. The major determinants of the quality of WEMS when it is indeed delivered unhindered, are the tools with which it is delivered and the content of the delivered material, as enthused by Huggins (1998, p.75) who expressed that "The effectiveness and efficiency of any distance learning program is in its delivery…"

3.1.1 Tools

Even with the improvements in Information Technology, the delivery tool still needs looking into. Borges and Baranauskas (1998, p.26) affirmed "Within the tradition of Artificial Intelligence (AI), intelligent systems for learning have focused on a 'mimicking' approach whose basic assumption is to provide systems with the abilities of tutoring, coaching or instructing the student". Occasionally, there is news of some new technological breakthrough that will enhance Internet Education in some way or another, and before one has first hand experience of this development, another breakthrough is announced or proposed. According to Ellsworth (1994, p.202) "When universities make attempts to become more technologically up-to-date, new technologies come along to make it obsolete". The stark reality is that these developments are not often readily available for some time after they come into being, and even when they are, they are rather expensive. The relatively high cost of Information and Communication Technology (ICT) means that not all educators or academic institutions can afford it, at least not in the latest form. It has been mentioned in the previous chapter that more recent developments in ICT make WEMS a more lifelike experience. Indeed WEMS had never been lifelike before this. This then means that a number of Internet education providers can only do it in the barest form: with inadequate technology and tools for efficient delivery.

Internet education is still facing considerable hurdles in many parts of the developing world, and the first and foremost of this is the poor state of the internal telecommunication infrastructure and the prohibitively high cost of telephone and Internet access charges (Newsarchive 2001). Of course, even where the tools for mounting a high grade interactive course may exist at one location, the efficiency of delivery at the recipient's location can altogether mar the delivery quality, if the recipient's tools are sub standard. Determining factors include the connectivity, the availability and quality of networks, the capacity of the computer system and so on. Therefore, for optimum quality, both the producer and the receiver of web-based education need have tools capable of supporting the information flow required for the course material. This is more especially so where the course contains graphics and /or streaming video. It is hence easily concluded that while there may be

pockets of inadequacies in terms of connectivity in developed nations, the developing ones have the heap of the problems.

3.1.2 Course/Instruction Materials

According to Newsarchive (2001)

> Educators also face the challenge of designing and supplying suitable instruction materials which can be adapted to the Internet. Most educational content now available online was designed in Europe or North America, and is therefore not altogether appropriate or suitable for students elsewhere.

While it is true that all good educational settings and situations require careful planning, Internet use for distance education requires this even more; the creation of material and preparation of text-based activities is of vital importance (Ellsworth 1994, p.434). Further, instruction via the Internet requires more than the usual lecture preparation. There is the constant need to create and adapt methods for students reinforcement and review, assessing the contents for effective approaches to distance education, pacing the presentations and the course, revising and updating supplemental and support materials and methods of delivery, amongst others. Each of these processes varies with the requirements of each course and presentation.

Thomas etal (1998, p.150) observed that many institutions convert lecture notes or other paper-based materials to HyperText Markup Language (HTML) for the World-Wide Web without modifications. They went further to decry this, stating “Simply converting the publication medium is inadequate for supported distance education, which aims to engage the student in a community of learning”. The crux of the problem here is a lack of understanding of the effect or role of the teacher in the classroom. It is to be understood that much of classroom materials will achieve little in the absence of the instructor, and this absence is to be considered in the design of an online material. Besides, the onsite instructor finds it easy to make common examples by pointing out of the window. The example that can be seen through the onsite window has to be taken to the online student and consideration has to be

given for this and other situations demanding that the design be more student-friendly. Internet based learning requires an educational framework that can recognise and consequently accommodate individual needs and take full advantage of the new and unique flexibility offered by this mode of delivery. Anything below this will simply perpetuate the structure of a paper based course classroom by merely replacing one delivery medium for another (McDermot, et al 2000, p.143).

Admittedly, the role of IT in the delivery of distance education, especially Internet based education, is a great one. The focus of the educators must however not be shifted from the instructional outcomes to the technology of delivery. Effective distance education is grossly dependent upon focusing on learner-needs, content requirements for meeting these needs, and the thoroughness of the teacher in selecting a delivery system, method and tools. Where the technology is available, there is the constant risk of the educational goals being overshadowed by the technological and logistics consideration. This is to be avoided, after-all the technology being the tool, is the one to be manipulated, and should not manipulate the course and/or the instructor. Care should be taken that the process/technology does not dictate the outcomes or affect the quality of the course content. An analogy can be drawn from the common weakness of simulator based training which is the tendency of the instructor to over load the simulation exercise, creating an unrealistic scenario, simply because the technology can do this and more. The result is a non-achievement or under-achievement of the objectives of the simulation exercise.

3.2 WEB BASED EDUCATION USER HABITS

The Internet is indeed a myriad of possibilities and realities. Besides being a portal of learning, it is also an arena of messaging, gaming, commerce and advertisement and other forms of asynchronous and synchronous communication. The average learner on the Internet also uses it for one or more of the other facilities, and in many cases, learning may just not be the priority.

On logging on, or even upon arriving at a desired site, one is often confronted with adverts which can often be very distracting, and can take a learner away from the learning activity for a while. Gaming and gaming adverts can easily take a learner away for the whole day or at least for the period scheduled for the learning activity. Though the Internet has the advantage of offering vast amounts of information, this becomes a disadvantage given that a search for a certain subject could come up with millions of hits, and the learner is disoriented owing to excess information. This has been known to discourage persons from going on a search, as it may be difficult for one who is not very experienced to find the exact answer to his/her quest. The author has been involved in helping colleagues to source information from the Internet in instances where these colleagues were unable to sift through the myriad of information presented upon a search. This simply easily becomes a disincentive.

The web based learner finds that reading materials onscreen is more or less a compulsion, and finds this often undesirable. A lot of people are unable to do much with text on the screen, and even many teachers and students find that the writings which they had concluded as satisfactory after reviewing them onscreen were fraught with errors when they were printed, and final amendments often have to be made to the printed paper form.

As established in chapter 2 above, drop out rates in remote learning and indeed Internet based programmes is higher than in the traditional setting. A number of prospective students also decline from commencing the programme, after all pre-commencement communications may have been concluded, or during such communication periods. The roles of motivating factors and proximity to the instruction site are vital in ensuring that a student stays on course and on the course. The dropout syndrome is perhaps the most prevalent amongst distance learners. This is also a culmination of one or more of the other habits mentioned. Sewart et al (1988, p.14) affirmed that the phenomena of non-starters and dropouts are a long established feature of remote learning.

Owing to the free atmosphere surrounding Internet based education, the tendency is for students to take the programme for granted, and proceed at a very slow pace, or

even in an epileptic fashion. It is difficult to reconcile such students with others, and some of such students may eventually be lost or may frustrate the efforts of the institution especially one that attempts to retain all its online students.

3.3 OUTREACH EFFICIENCY/ LIMITATIONS TO REACH

3.3.1 The Several Divides

The International telecommunication Union (1999) declared that migration to an electronic-based education has come at a difficult time for most developing countries. In most nations the state that has traditionally been the main financier of education is facing severe financial difficulties, therefore giving up its former direct participation. This is a fair presentation of the situation in developing countries, at least for those that have attempted to embrace this form of education, in the first instance. It is worth noting that not all developing countries have taken this initiative.

This study while attempting to have a clear understanding of this and other situations, proffered hypotheses which were tested by survey. As described in chapter 1, in order to test the study hypotheses, questionnaires were issued to 96 students, of which 42 responded, giving a 43.75% response rate. Upon the issue of the questionnaire, of the 42 respondents, on the section under outreach (see appendix II) 35, representing 83.33% agreed or strongly agreed, and were therefore of the opinion that, the Internet is not well established in developing countries. 37 (88.10%) were of the opinion that the use of computer-based training is not wide spread in training institutions in developing countries. The issue of student connectivity on a regional scale then becomes one worthy of consideration. If the region is not well connected, there is very little that the prospective student can do. Given that access to a computer and the Internet at home or at work can affect the success of a student on an Internet based distance course

Table 3.1 below is drawn from information supplied by Netsizer.com on the number Internet hosts in various countries as of August 25, 2002.

Table 3.1: Number of Internet Hosts and Users, 2002

S/N	Country	Number of Hosts	Internet Users	S/N	Country	Number of Hosts	Internet Users
1	U.S.A	756,281,100	172,288,000	**11**	S. Africa	385,100	3,020,190
2	Japan	113,983,000	992,228,000	**12**	Brazil	1,492,860	30,166,900
3	Germany	5,628,400	42,485,200	**13**	Russia	468,600	15,629,400
4	UK	4,076,930	26,666,300	**14**	Poland	574,199	6,646,320
5	Canada	6,032,710	26,336,100	**15**	Czech Republic	232,100	477,056
6	Australia	1,816,430	10,805,100	**16**	Mexico	872,700	6,162,780
7	Finland	1,228,060	3,841,420	**17**	Argentina	414,500	2,511,930
8	Netherlands	2,745,010	15,145,500	**18**	Egypt	38,517	3,032,300
9	Sweden	1,724,550	7,185,530	**19**	Philipines	51,033	691,707
10	France	2,035,540	22,361,800	**20**	Dominican Republic	33,500	721,210

In the same questionnaire, 35 (83.33%) of the respondents to the questionnaire were of the opinion that computer and Internet access is not easily affordable in developing countries. Now this is dependent both on the cost of these systems as well as the purchasing power of the people. The cost is high and the purchasing power is low, giving a much lower potential for access than that obtainable where the course materials are being developed.

Besides the difficulty of access, another shade of the overall problem is therefore introduced, namely; incompatibility of teaching-learning modes. This is easily explained. Since the instructor finds that there is a need for high capacity tools, demanded by the course content, and given that the technologies necessary for this are available, it is only natural that those technologies are put into use in the interest of the objectives of the course. This however introduces a greater problem than that which the learner has been trying to grapple with, in that even after attaining the limited availability that his/her region can offer, access to all aspects the course is either difficult, epileptic or outright impossible as a result of the high requirements IT for effectively benefiting from the course which are unavailable to him/her.

The digital divide has been a hue and cry for quite some time. This is however not the only existing divide, at least not where e learning is concerned. Besides the civil

service, working hours in developing nations take practically the whole day, and even civil servants find that they have to work overtime in order to notch up their income, which is relatively low, in comparison with developed nations. In addition, practically all gainfully employed persons still have to have some other vocation in the interest of improved income. The result is that the e-learning targets are altogether not available. A large number of persons willing to take distance-learning courses do not manage to proceed for years on end. This is yet another limitation to Internet education.

A fallout of these divides is that these factors culminate in the dearth of information about the availability and even flexibility of relevant courses on the Internet, since the average person is withdrawn from information sources either by distance or by time. In relation to this, 38 (90.47%) of the respondents were of the opinion that it will be necessary take special measures to be able to maximize outreach in most developing countries.

The view that the average student in developing countries is not very comfortable learning by computers was shared by 13 (33.33%) of the respondents. The percentage is not high, but it is enough to establish its existence though 16 respondents or 38.10% opined to the contrary. This is yet another fallout, given that non-familiarity with the computer and Internet will result from their non-availability. This is itself a learning barrier akin to that experienced by persons who have attempted to teach feral children the basics of education. The source of relief here however, is that computer and Internet use can be learnt given that they are based on traditionally acquired communication skills. This however remains yet another challenge that has to be tackled.

Below, in Table 3.2 is a tabulated summary of the respondents' opinions on outreach.

Table 3.2: Computer and Internet availability to students in developing countries

S/N	ITEMS	RESPONDENTS							
		SD	D	N	A	SA	TOTAL RESPONDENTS	% AGREE	% DISAGREE
1	The Internet is not well established in developing countries	-	3	4	18	17	42	83.33	7.14
2	The use of computer-based training is not widespread in training institutions in developing countries	-	3	2	19	18	42	88.10	7.14
3	Computer and Internet access is not easily affordable in developing countries	-	3	4	19	16	42	83.33	7.14
4	The average student in developing countries is not very comfortable learning by computers	5	11	12	12	2	42	33.33	38.10
5	It will be necessary to take certain special measures to be able to maximize outreach in most developing countries	2	-	2	25	13	42	90.47	4.76

For better comparison between developing and developed countries, as well as the relationships to population, tables 3.3 and 3.4 below portray a random selection of developing countries and other developed nations respectively, for the year 2000 estimated number of personal computers per thousand people, and the estimated total number of internet users with data provided by the World Bank's World Development Indicators Database of 2002 (the author derives the 'Internet Users as percentage of population').

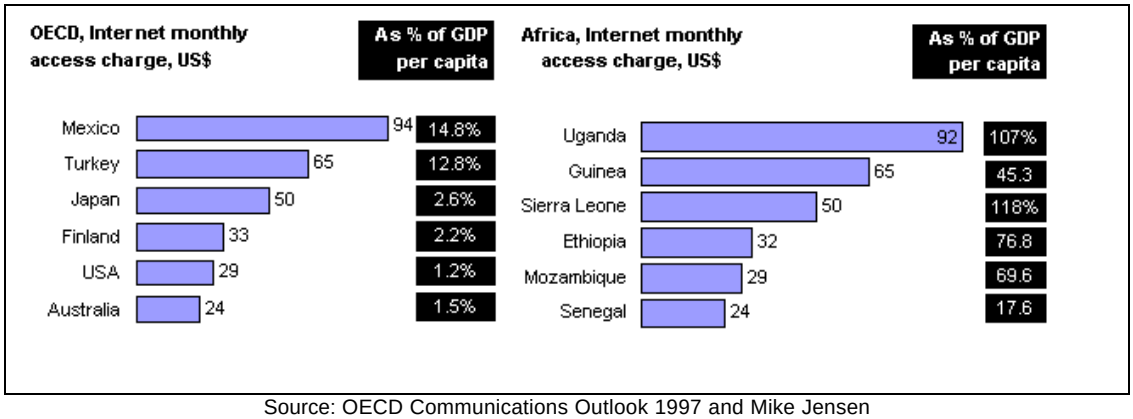
Table 3.3:Computer and Internet use: Developing Countries

S/N	Country	Population	Personal Computers Per Thousand	Internet Users	Internet Users as % of Population
1	Chad	7.7 Million	Less than 1	3,000	0.039
2	Burundi	6.8 Million	Less than 1	3,000	0.044
3	Ethiopia	64.3 Million	0.9	10,000	0.016
4	Cambodia	12 Million	1.1	6,000	0.050
5	Angola	13.1 Million	1.1	30,000	0.229
6	Bangladesh	131.1 Million	1.5	100,000	0.076
7	Ghana	19.3 Million	3.0	30,000	0.155
8	Cameroon	14.9 Million	3.3	40,000	0.268
9	Kenya	30.1 Million	4.9	200,000	0.664
10	Cote d'Ivoire	16.0 Million	6.1	40,000	0.250
11	Nigeria	126.9 Million	6.6	200,000	0.158
12	Vietnam	78.5 Million	8.8	200,000	0.255
13	Gabon	1.2 Million	9.8	15,000	1.250
14	Ecuador	12.6 Million	21.7	180,000	1.429
15	Egypt	64.0 Million	22.1	450,000	0.703
16	Colombia	42.3 Million	35.4	878,000	2.076
17	South Africa	42.8 Million	61.8	2.4 million	5.607

Table 3.4:Computer and Internet Use: Developed Countries

S/N	**Country**	**Population**	**Personal Computers Per Thousand**	**Internet Users**	**Internet Users as % of Population**
1	Spain	39.5 Million	142.9	5.4 Million	13.671
2	Japan	126.9 Million	315.2	47.1 Million	37.116
3	United Kingdom	59.7 Million	337.8	18.0 Million	30.151
4	Canada	30.8 Million	390.4	12.7 Million	41.234
5	Netherland	15.9 Million	394.1	3.9 Million	24.528
6	Australia	19.2 Million	464.6	6.6 Million	34.375
7	Singapore	4.0 Million	483.1	1.2 Million	30.000
8	Norway	4.5 Million	490.5	2.2 Million	48.889
9	Sweden	8.9 Million	506.7	4.0 Million	44.944
10	U.S.A	281.6 Million	585.2	95.4 Million	33.878

The connectivity is perhaps affected by the relative cost of internet access, which naturally becomes cheaper as connectivity increases. Figure 3.1 below shows the relative cost of Internet access between some African and some industrialised nations.



Source: OECD Communications Outlook 1997 and Mike Jensen

Figure 3.1 Internet monthly access charge: OECD and Africa.

These are simple indicators of the acute differences in connectivity on the two sides of the digital divide. The relative higher costs of connectivity may be reduced as they are better connected, though some other factors such as economic strength, taxes and rates will have their effects.

3.4 IMPROVING THE USER

While a distance teaching institution may be unable to undertake to connect its prospective students to the Internet or procure computers for them, certain of the limitations to student-student and student-teacher interaction, especially those stemming from non-familiarity with or incompetence in the use of IT tools and can be systematically approached. Matters relating to bridging the digital divide in terms of infrastructure will be treated in chapter 6. However, some items worth noting and adopting are highlighted below.

- The use of good and effective instructional skills may quickly impress a student thereby encouraging him/her to improve his/her IT skills in order to stay on the course. In the same vein, the relevance of the course and strong points in favour of taking it should be soon stressed.
- Constantly keeping in touch with the student is vital, especially at the initial stages of the course. This motivates the student, giving a feeling of relevance and importance. It also helps identify those areas that may pose problems to the individual student so that they can be dealt with before they are aggravated. Students that have not been active in discussions and other interactions should be observed and followed up. Setting up a toll free number is a very good way of encouraging student participation.
- The use of several feedback and interaction modes is ideal and may include personal and conference calls, E-mail, fax, video, teleconferencing and computer conferencing. It may also help to include a mode or modes with which the student is already familiar, examples being pre-stamped and addressed envelopes or postcards. Any of these methods should also be employed in reporting difficulties with any of the other methods. Also,

critiquing by students should be encouraged, as this also exposes the areas where they are having difficulties.

- Demanding student-student and student-teacher interaction early in the course by email and other electronic means will help students adapt quickly to the use of the tools.
- If the institution has a representative close to the student, such a representative will do well to motivate the student either by making frequent calls, personal appearances and probably attending to any technical difficulties the student may be facing.
- It will be of particular help if the institution can establish of a continuous conference for discussions of hardware and software problems as well as the acquisition of communication, computer and Internet skills by the students.
- In a similar vein, an aspect of the course could focus on communication skills and the use of computers and the Internet for academic purposes. This is because the Institution does not want the student to drop out of the course owing to an inability to cope with the communication/IT skills requirements of the course.

3.5 SUSTAINABLE DEVELOPMENT

In the best interest of the international community, and especially in the maritime sector, the development of the less developed nations is to be pursued. In the absence of this, maritime legislations and treaties will be impossible to enforce, the safety of life and property and the protection of the environment will be mere unattainable goals. Furthermore, the current dearth of seafarers and prospective seafarers in Europe is a trend that may probably extend into other areas, including maritime management and even education. The implications include a need for developing nations to fill the gaps with suitably qualified personnel. Also, if the present crop of experts is lost, there is the tendency that even Internet Based Education (IBE) may suffer in the long run. Hence the present drive may then be

well timed – there is need for improved educational methods, and IBE is a good option. In any case, the developing nations should not be left behind.

3.5.1 Sustainable E-Learning

It is not unusual to hear of one e-learning institution close down or to hear that a school is suspending its courses on the Internet. The reasons for these are numerous, and may include the fact that the initial foray was principally profit driven, and since the profits were not high enough the alternative was to discontinue the project. It could also owe to low enrolment, probably because of low quality of tuition and course materials as well as student support, or even poor publicity. Lufthansa's Project Lilienthal, an Internet based pilot training programme was suspended owing to the enormous demand on Instructor time, which rendered the programme unfeasible. Many other reasons could be adduced for these closures, but the end result is often a truncation of the learning experience of a number of persons who in most cases viewed the programme as a solution to many hitherto insurmountable problems, some of which may include those itemised in chapter 2.

To this end, the commencement of any IBE scheme should be preceded by a thorough feasibility study which will be cognizant of the numerous challenges earlier mentioned as well as the items that follow, in this chapter.

3.5.2 Mobilizing Funding

Designing, developing, mounting and delivery of an IBE as well as its evaluation and continuous improvement are definitely capital intensive. If it is to keep running, it will have to be maintained, managed and the students constantly supported. The sources of funding for the project must be such as are willing to bear initial losses, heavy as they may be, and there are not too many of such sources.

In response to the questionnaire, one of the respondents offered that the issue of financing be resolved on the basis of 'end user pays', i.e. the ship owner and developed countries. The argument postulated was that maritime labour is supplied

by the developing countries and that the G.7 nations handle more than 80% of world trade. Arguments may be made on one side or the other of this opinion, but the underlying fact is that such an undertaking must be funded, and the source(s) of fund must be committed enough to ensure continuity of support. Developing nations may be unable to do this.

Fund mobilisation could involve approaching governments, philanthropic organisations and individuals and even fostering technical cooperation.

3.5.3 Systematic Development

The advantages accruable from Internet education transcend the academic and professional development of the persons and communities concerned. It is a well-known fact that education is a major factor in development, and the means of spreading education and information are therefore co-factors. Suffice it to say that the Internet and IBE will eventually find their ways into most homes in the future anyway, and the present pursuit of Internet education is only an acceleration of the inevitable. Given that these assertions are true, it still must be noted that most societies can only accommodate so much development in a given space of time and socio-economic situation, and an acceleration beyond this thresh hold value may be counterproductive.

While this should not in itself be a limiting factor to development, especially in Internet Based Education and maritime education, it should serve well as a guiding consideration. Cognisance will also be taken of the various strengths that may be exploited, in each society, and the weaknesses that should be noted. Again, some areas of education are more relevant in certain societies or countries than others, and where selective outreach has to be practiced (probably owing to limits in resources), an understanding of these peculiarities will be helpful.

3.5.4 Cultural Considerations

However, it must also be noted that all communities have their own peculiarities, and while some may be mild, others can be startling in their characteristics. Even in the United States, it may be interesting to note that the Amish are yet to embrace the simplest forms of development taken for granted even in the least developed countries. In this case of course, Internet and e learning may well be out of the question.

It is therefore pertinent to note that while developing any system or set of systems designed to affect any group of persons, even if in their own interest, thought ought to be taken of the ways such systems will best integrate with minimal negative effects. Collis (1999, p.202) observed that the individual's response to computer related systems is affected by the individual's culture. Watson et al (1998) as cited by Collis (1999, p.202) also expressed that the software systems meant to support group activities are in most cases designed based on the custom of the culture in which the systems were designed. Of course it is easy to understand that the designing culture and the targeted culture are not always the same, hence developers of any Internet based distance education will do well to take cognisance of the cultural contexts of the learning scenario.

3.6 SUMMARY

Given that the need to develop a Web Education Management System for the World Maritime University is a noble consideration, and given that the objectives are as contained in Resolutions 8 and 12 of the STCW Convention, the target of such an outreach remains the developing countries. These countries are well represented in the university, and the opinions of their representatives are that:

- The Internet is not well established in developing countries
- The use of computer-based training is not widespread in training institutions in developing countries
- Computer and Internet access is not easily affordable in developing countries

- It will be necessary to take certain special measures to be able to maximize outreach in most developing countries

They did not in majority, agree that the average student in developing countries is not very comfortable learning by computers, though a significant percentage was of this opinion.

By taking certain measures, the online student is easily improved, and certain measures taken by the institution and the instructors will go a long way in making the student better adapted to learning online, and ultimately increasing the efficiency of the system, and finally that of the International Maritime Organisation as expressed through the university.

The use of a WEMS should be cognizant of the need to develop at a pace sustainable not only for the institution but also for the learner and target societies. The inability of the developing nations to fund the education and necessary infrastructure will also have to be considered, hence the source of funding. The peculiarities of the different localities and attitudes to learning are also vital.

CHAPTER FOUR

THE WORLD MARITIME UNIVERSITY: COURSES AND DELIVERY

4.1 WORLD MARITIME UNIVERSITY BACKGROUND

The World Maritime University (WMU) was established in order that the observed manpower need in the global maritime industry might be met, especially in the developing nations. The university has since produced numerous graduates functioning in varied units of the industry in a large number of countries in the private and government sectors as well as in regional and international maritime and allied organisations. An increasing number of WMU graduates are promoted to policy-making levels in their home governments and even in International Maritime Organisation (IMO), amongst others. Thus the university makes its vital contribution to improve the quality of decisions at all levels of the global maritime community, in the interest of the economy, life and property and the marine environment.

The academic programmes in the WMU include masters and postgraduate diploma tracks in Maritime Administration, Maritime Education and Training, Maritime Safety and Environment Protection, Port Management and Shipping Management. The attempt is to in a broad sense, cover most of the vital areas of the service providing maritime sector. Graduates return to their home countries to improve the quality of government decisions in the maritime sector and hence the quality of the global marine environment.

4.1.1 Course Delivery And Funding

Courses are delivered on site. Students therefore arrive the WMU from their various countries for the duration of the course of study. The learning experience includes lectures seminars and field studies to schools, firms, conferences and seminars across Europe, as appropriate to the particular course of study.

The university, drawing from its position as an arm of the International Maritime Organisation (IMO) and its relationship with academic and maritime training institutions in Europe and the American continent, WMU is able to secure a large number of visiting lecturers and professors from other institutions and other maritime organisations and firms. This ensures that the student is in touch with the industry while in the classroom, and also has a feel of the approach of other institutions besides the WMU.

An implication of these however is that the training programme is expensive, and runs into amounts not easily or conveniently offered by the developing nations which incidentally are the principal targets for the programmes. In consonance with Resolution 11 of the Standards of Training Certification and Watchkeeping for Seafarers 1978 as amended in 1995 (STCW '95), the studies are supported by fellowship awards, which are funded by well meaning countries and philanthropic organisations, and administered by the university.

The course delivery method is basically traditional, but the university is connected to the Internet, and students are encouraged to draw available knowledge from Internet based sources.

4.2 TARGET POPULATION AND COURSE FRAMEWORK

4.2.1 Target Population

Pursuant to Resolution 12 of STCW '95, which stresses the need to employ the expertise and resources available to WMU for the transference of maritime education and knowledge to developing countries, the university's target is principally the developing nations of the world. In a similar vein, the provisions of Resolution 14 of the same convention (STCW '95) promote that women be given special consideration to ensure equal access with men, in all sectors of the maritime industry. It also indicated that greater participation for women in maritime training at all levels be highlighted. As a result, women are presently being encouraged by the

WMU. The composition of the students for recent years shows evidence of a greater percentage of females in the annual intake.

4.2.2 Course Framework

Msc Courses

The WMU presently offers an MSc in Maritime Affairs in two modes, the first being a standard 17-month schedule while the second is a 9-month accelerated programme designed for persons with the experience and academic foundation to take the track. Within the Maritime Affairs programme, are the following specialisations.

- **Maritime Safety & Environmental Protection**

  Persons eligible are those who have had a technical background as a professional seafarer either as a deck or engine officer. It is designed to prepare and update persons for senior levels of responsibility in the administration of maritime safety provisions or marine environmental protection measures within the framework of integrated maritime management.

- **Maritime Administration**

  This is designed to provide the knowledge base necessary for efficient performance at senior level positions in general maritime administration and maritime policy development work, and gives a thorough understanding of current issues in maritime administration as well as preparing them to meet the demands placed on maritime administrations.

- **Maritime Education & Training**

  This Specialisation provides an appreciation of major developments in maritime education and training systems, including current global trends and developments, and gives an appraisal of the principles and knowledge requirements for certificates of competency and related requirements in

addition to enabling the development of the students' own areas of expertise and the appropriate application of their pedagogical knowledge to these areas.

- **Port Management**

  The aim of this specialization is to promote principles and practices of port management within the framework of overall transportation systems, in order to grant firm knowledge of different aspects of port activities with special emphasis on the management of operations, marketing, finance, information technology.

- **Shipping Management**

  This Specialisation is open to students who have followed the Maritime Management Pre-Specialisation. It aims to develop a thorough grasp of different aspects of shipping operations by providing a detailed understanding of the principles and practices of shipping management within the framework of overall transportation systems. There is a particular emphasis on the management of finance, strategy, marketing and information technology.

Postgraduate Certificate And Post Graduate Diploma

The Postgraduate Certificate and Post Graduate Diploma tracks are for those persons who for some reason(s) are unable to satisfy the requirement for the MSc programme. These persons may be advised during the course of the MSc, in which case they do not necessarily complete the MSc programme, or the status of their certificate may be decided upon completion, depending on their academic standing at the various relevant stages of the course of study, against the university's prescribed academic requirements.

The English And Study Skills Programme (Essp)

All students applying to the university are required to produce the result of a standard international test of English, even if the student's home country uses English as a working language. For students admitted into the standard MSc programme, the university evaluates the English test results and decide on whether or not the prospective student should proceed directly into the MSc course or if some study of English is required. For those to take a course in English, the Intensive English Study Skills Programme (ESSP) is included in the training programme, and it commences about three months before the MSc programme. The purpose is to equip students with necessary skills to successfully follow a postgraduate programme, and is not open to the Nine Month Accelerated Programme. The ESSP is especially relevant given that majority of students in the WMU are from developing countries, particularly in Asia where English is seldom the official working language.

Professional Development Courses

These are short time courses in various topical areas, including Port Marketing, Pedagogic Skills, Maritime fire safety, Survey and survey practices, Casualties and the human element, Maritime casualties investigations, Noise and vibration on board ships, Factors in the design of ships, Pilotage and manoeuvering of ships, Structural strength of ships, life-saving appliances, Damage stability and damage control, ISM implementation, and others that may be developed on demand or as issues arise.

The short nature of the courses may however not attract prospective participants from far distances.

4.3 THE NEED FOR ENHANCED DELIVERY METHODS

Reference is again made to the survey mentioned in chapter one and discussed in chapter three. Regarding the role of the WMU in improving Maritime Standards, five

hypotheses were tested, and a further hypothesis was tested under a general heading, as presented in the table below.

Hypotheses

That the World Maritime University is focused on improving maritime standards especially in developing nations was agreeable to 36 of the 41 respondents to the question, either simply agreeing or agreeing strongly to the statement, representing 87.80%. This indicates that there is indeed a widespread recognition of the role of the WMU in the development of maritime standards in line with the founding objectives.

28 of the respondents were of the opinion that the WMU will increase its efficiency by reaching more potential students. This is a 68.29% representation and only 2 or 4.88% of the respondents opined to the contrary, 11 respondents were neutral. The general consensus was therefore on of the WMU's aiming to improve its outreach to more potential students. In other words students who for some constraint or the other would not be admitted ought to have the benefit of the wmu's education.

There were 42 respondents to the statement that the growth of the maritime industry demands that WMU reaches more students than it presently does. Of these, 33 or 78.57 responded positively while 4 or 9.52 percent dissented.

There were 42 respondents to the statement that Internet aided education will enable the university reach more students, who will be able to learn at a distance. Of these, 31 or 73.81% responded positively while 16.67% were of a contrary opinion.

Of the 42 respondents to the statement that developing countries really need to have better access to the WMU and similar institutions, 39, representing 92.86% were in agreement while 4.76% did not agree.

The only hypothetical statement made under the general heading was that the benefits accruable from better training in the global maritime industry far outweigh

the efforts and challenges facing WMU's Internet based education. To this, 39 persons responded with 23 or 54.76% being in agreement. While there was no dissent, 16 persons were neutral to the statement.

Table 4.1 Role of WMU's Education in Improving Maritime Standards

S/N	ITEMS	RESPONDENTS							
		SD	D	N	A	SA	TOTAL RESPONDENTS	% AGREE	% DISAGREE
1	The WMU is focused on improving maritime standards especially in developing nations.	1	-	4	18	18	41	87.80	2.43
2	The WMU will increase its efficiency by reaching more potential students.	1	1	11	13	15	41	68.29	4.88
3	The growth of the maritime industry demands that WMU reach more students than it presently does.	1	3	5	19	14	42	78.57	9.52
4	Internet aided education will enable the university reach more students, who will be able to learn at a distance.	1	6	4	19	12	42	73.81	16.67
5	Developing countries really need to have better access to the WMU and similar institutions.	2	-	1	19	20	42	92.86	4.76
6.	The benefits accruable from better training in the global maritime industry far outweigh the efforts and challenges facing WMU's Internet based education.	-	-	16	16	7	39	54.76	0.00

4.4 APPLYING WEMS TO WMU OBJECTIVES

Now, the responses expressed above are indicative of the need to reach more students. Item 4 specifically demands that the university will do well to examine the possibilities of Internet based education in the light of its own (the WMU) global focus and the global reach of the Internet and the World Wide Web. Basically, it must be admitted that in the best interests of sustainable development, more reach ought to be established if the global maritime population is to really benefit optimally from the World Maritime University. It must be admitted that the Internet is the most viable tool and the only one capable of limitless reach – the ultimate goal.

In view however of the issues raised in chapters two and three of this study, which stress the limitations of Internet based education, certain measures will have to be taken to achieve results, and the desired ones.

It will well be noted however note that in the early 80's most students admitted into the WMU were not computer literate. The percentage of computer literate students admitted has increased over the years, and is now remarkably higher. The inference is that the source locations of the WMU students –developing countries – are improving in the computer literacy and internet use, and the WMU will have better chances of floating a WEMS now than it would have in the past. According to apc.org (an African Internet monitoring organisation located in South Africa), which emphasises that all of the 54 African countries and territories have Internet access in the capital cities, "As of mid 2002 the number of dialup Internet subscribers was close to 1.7 million, 20% up from last year [2001], mainly bolstered by growth in a few of the larger countries such as Egypt, South Africa, Morocco and Nigeria" This is no denial of poor connectivity, but also emphasises that though difficult, e-learning can take place in Africa and indeed developing countries.

Who funds the courses in both cases? The cases in question here are; increasing the reach of the WMU at the university itself – this includes overheads and equipment and indeed everything required onsite - and the costs of battling the digital and other divides that would prevent this increased reach at different

locations. It is easily realised that but for fellowship funding for the MSc courses in the university, a much smaller number of students would be on site, and this is an indication of what may result in any other programme targeted at developing nations.

4.4.1 Getting Started

Which Programme(s) should be run by WEMS?

The programmes offered by the university have been examined, and given the extensive nature of a Web Based Education Management System (WEMS), and the intricacies and challenges involved in its commencement, it will easily take off very smoothly if the professional development courses were introduced. A factor however is the annual number of persons presently enrolling in these programmes. However again, as it has been stated earlier that the duration of the courses is often so short as to not encourage participants from far and wide, it may just be that mounting these courses on the web may attract more participants.

Before commencing the journey to the university, non-seafarers admitted into the programme for the 2002 were sent course materials to help them improve their understanding of naval architecture and prepare for one of the modules requiring this knowledge. This may be seen as the initial role for the WEMS. The prospective students are given online preparatory lectures in certain modules or even in certain courses that are necessary for a sound beginning. As the system becomes more stabilised, other items are added and the scope is broadened.

Designing and Running the WEMS

The question of who designs and who runs the WEMS programme is an important one. This includes the website design, the course redesigning to fit online delivery, the mounting of these courses, their delivery, their support and sustenance and other relevant issues. This is definitely beyond the average university instructor, and though while technical expertise may exist within the system, help sought externally

from service providers or outfits/individuals with experience in similar ventures will do well for the system.

Getting Help and Importing Resources

Upon examining certain service providers, Okonna (2001, p.59) rated Blackboard, WebCT and Lecnado as deserving total averaged scores of 3.85, 3.75 and 3.45 respectively on a scale of 5.0 maximum possible obtainable score. His parameters included Cusomisation, Course Content Organisation, Communication Tools, Collaboration, Assessment Tools, Course Student and Management, Multimedia Applications, Language Applications, Ease of Use, Social Environment/ Support.

Taking a closer look at these parameters, the WMU owing to the nature of its students, will be much more interested in the items;

- Language Applications. In this case Lecando offers 3 languages of English French and Swedish while the other two have nothing to offer foreign students
- Ease of Use. Blackboard was scored 4.0, WebCT, 3.5 and Lecando 3.5 respectively. Reference was made to Siekmann (2001, p.613) who claimed that the University of Florida conducts a one day workshop (orientation) for Blackboard and a two day workshop for WebCT, at the University of Florida. This may be inconclusive though as nothing was mentioned about workshop time for Lecando, which this author considers easy to use.
- Multimedia Applications. Given the need for graphics in maritime education, this is a vital aspect, and Lecando had a rating of 2.0 while the other two were rated 3.0 each.
- Social environment and Learning support. Lecando was rated 3.5 here while the others were rated 4.0 each. The social environment is important in an off-location learning situation.

No recommendations will be made about which system ought to be employed since several other factors will be applicable, given that the WMU ideally needs a customised system, and each of the three systems may have been improved in

various areas since the evaluation. Such a decision will be taken at the time of the decision to commence the programme.

4.5 PRACTICABILITY: EXAMINING THE WMU INTRANET

Besides Internet connectivity, the university also operates an intranet system which has been developed to supply and manage information within the WMU staff and student community. Managed as a password protected web site, the WMU intranet gives a good platform for an empirical model for a WEMS structure for the university's e-learning system. Documents can be loaded unto the intranet and can be assessed by any authorised logged in user. Items such a grade, random number (a number assigned to each individual student for the purpose of the anonymity of students in assessment), classroom schedules, lecture and assignment schedule and information from the registry and others. Certain features are designed to enable the student to manage certain aspects of the web page from any location provided access is obtained.

However, the WMU server has been down occasionally in recent times, such that Internet access is unavailable at these times. Also observed, is that the intranet has been shut down several times. These are of course characteristic of newly developed systems, and in view of these, the stability of these systems and their sustainability have to be established before the WMU is to support online learning. It has been said that the student is motivated by continuous flow of information. This then means that such outages or shut downs are not in the best interest of the programme.

Further, the capacity of a tool is not very useful if it is under-utilised. Quite a number of features on the Intranet are still being developed. Again, the student community has been intimated with the possibility of uploading documents unto the intranet, but even upon request, guidelines have not been available. Factors such as these are disincentives, and should not be regular features of the WMU WEMS, further demanding that there may need to be more hands to ensure a speedy development

of the system and that to be employed for the university's Web Education management System.

4.6 SUMMARY

Indeed the World Maritime University has enough responsibilities to the outside world –in this case the international maritime community – to pursue an enhanced mode of delivery. For one, its range of courses is designed to rejuvenate the maritime sector consistently. However, many of these courses would be more prosperous in meeting their target objectives if the university was ubiquitous.

Responses to the survey reveals that majority of students from developing countries are convinced that;

- The WMU is focused on improving maritime standards especially in developing nations.
- The WMU will increase its efficiency by reaching more potential students.
- The growth of the maritime industry demands that WMU reach more students than it presently does.
- Internet aided education will enable the university reach more students, who will be able to learn at a distance.
- Developing countries really need to have better access to the WMU and similar institutions.
- The benefits accruable from better training in the global maritime industry far outweigh the efforts and challenges facing WMU's Internet based education.

In view of this, it can be understood that e-learning WEMS for the WMU is indeed vitally needed, though there will be challenges, and the challenges may have to be faced.

The present structure of the WMU's intranet is a good basis, but the management and stability of the system will have to be improved since students learning at a distance will not have the consolation of the university's other sources if there is an

outage or other problem with the system. The result of such occurrences will not aid in gaining students, but may lose them.

The cost of establishing a WEMS is high, especially for marine related courses where simulation is the order of the day. The source of such funding must be considered.

CHAPTER FIVE

MANAGING THE TRANSITION

5.1 SHIFT IN PARADIGM

The commencement of a distance-learning programme demands certain changes including thinking, strategy, material acquisition and use, human resources quantity and variety. A web based distance learning system is for reasons earlier highlighted, more demanding, and while in the former case spacio-temporal considerations are of paramount importance, in the case of web based systems, besides the course materials, technical considerations are of the more important, and to a large extent determine a lot of other items to be considered. This is more especially so given that the space and time limitations are reduced or totally eliminated by the use of technology. Rowntree (1992, p.254) stated, “The organisation that introduces open learning will almost find itself involved in organisational change. Not only is open learning a change in itself, it usually leads to other changes within the organisation. These changes can be far-reaching”.

Several factors which will determine if an institution should venture into distance education and indeed web based distance education or not, have been discussed, however, these factors really should give the managers of such institutions an empirical understanding of what has to be put in place before, during and after the decision for the venture rather than be seen as deterrents; after all it is almost imperative that an institution wishing to increase its outreach should do that by means of the Internet, given the almost limitless capacities attainable with this approach.

Such a decision however demands that there be a strategic rethink, as the approaches to traditional or conventional education systems are a far cry from those involving remote teaching, and further for those demanding inputs from information and communications technology.

In the words of McNay (1987, p. 12)

> Open learning, at the extreme, can turn an institution upside down. For a start, it blurs the distinction between those two groups of staff [teaching and support staff] …It can invert the control mechanisms in teaching and learning, putting decisions more in the hands of the student than the teacher. It can shift the whole budget of an institution from a staff intensive service industry profile nearer to a production industry capital intensive model. It can abolish timetables, exams and other familiar maps and milestones of institutional topography. It changes roles; it demands new skills and attitudes; it threatens vested interests; it clashes with developed norms for measuring workloads or allocating finance, and with established administrative practices. In two words, it can be disruptive and revolutionary.

The rethink will therefore involve not only looking forward to improved productivity or whatever reasons the Web Education Management System (WEMS) is set out to achieve, but also ensuring stability during the transition and after.

5.1.1 The Institution

Like any other organisation, the academic institution is faced with challenges resulting from the intended change. Since the change is intentional and therefore expected to be for the better, several areas will need improvement to meet the input required for better output. Factors to consider will include the lack or availability of expertise, the suitability or otherwise of existing working practices and the working environment, the feelings of the instructors, students and managers about the change, and so on. Principally, the institution is concerned as to whether or not the introduction of WEMS will impact positively or negatively on the recognition of the

institution. The cost and the effect of such cost (layoffs, increased responsibilities for the same or reduced remuneration to name a few) are also important.

5.1.2 The Administrators/ Managers

As far as management is concerned, a transition such as this is like any other. There are several peculiarities in every case, but the management of such a transition still is change management. According to Naylor (1999, p.463) "The support of senior management is vital in overcoming resistance to change. Not only will it symbolise its importance to the whole organisation but it will have practical value when resources are being reallocated among departments".

For the purpose of this study, change will be examined in various perspectives, as they may affect the typical organisation, and given the context of the academe, as they may affect major reorganisations within the teacher/learner environment. Generally, the following perspectives are worth considering:

Context and uncertainty perspective

These are concerned with the understanding of why the change has or will come to be, as well as the external factors relating thereto. This also involves the relationship between the change and the environment (including customers and clients). Here, the focus will be on the reasons for introducing WEMS into the structure of the World Maritime University - being that the outreach of the university may be increased - and how the users and even supporters of the project external to the university are to be affected.

Content and scale perspective

This is the 'what' of the change, and relates to how fundamental or even strategic, the decisions relevant to the change are. One will also consider the varied options

available within the framework of achieving the set objectives. For the WMU WEMS, the considerations here include:

- To what degree is the WEMS to be applied? Will it supplement or replace what is on the ground?
- How much of the university's training programme will go on the web?
- How many of the target countries/ regions are to be initially targeted?

Process perspective

This concerns the leadership of the change process, the commitment of all parties concerned, the various roles and the participation of all players in these roles, the expression of the objectives and values of the change. Particularly in this case, the WMU's principal objective remains that of enhancing global maritime excellence. The approach of the university in applying WEMS to this objective and the processes involved come into focus.

Method perspective

The method perspective concerns the approaches to be taken in the pursuits of the change. The fact that change is continuous, and that the degree of the challenge may be greater at the time of the proposed point of arrival is also vital. This means that if the intention is to reach a forecasted number of persons by establishing a definite number of on-line spaces by a particular period, certain other developments during the pursuit of this goal could determine that more spaces be provided. This could occur as a result of a new legislation or incident that determines the necessary commencement of some specialised training programmes, etc. In other words this considers that the environment is grossly unstable, and changes constantly.

The perspectives described above are summed up by McNay (1987, p.15) where he expressed that those preparing for open learning should clarify issues such as why the proposals are being made; who the programmes will be aimed at; what forms the programmes will take; how policy will be developed and negotiated to approval; how much is to be done and when these will be done as well as how long it will take

to do them; where the institutional focus for the work will be located and; how much it will all cost.

5.1.3 The Lecturers/ Instructors

The consideration includes the fact that the project may involve challenges which could be technical, related to the teaching tools, as well as interpersonal, in this case where the instructor was satisfied with scribbling on the board and the new guidelines for e-learning insist on increased interaction online. Further, where there had been no quality assurance system and the lecturer could get away using outdated or substandard materials, the fear of putting such material on the Internet is very great. The considerations may be more than these. The lecturer may wonder what his/her role will be if the material is already placed on the site, hence a fear of redundancy. Moreover the flexibility of the Internet makes it easier for another instructor to be assigned to manage a course that was written by some other person, and this induces the fear of job insecurity.

Again, the instructor often finds it difficult to adapt to a situation where the central role is no longer that of the instructor but that of the student. This to some, is a loss of authority. Several other issues arise, including the total change in 'lecture' times, the adaptation to lecturing physically absent students, the increased contact hours for attending to student's questions and enquiries and so on, are enough deterrents in themselves.

There is a need for the instructor to see his/her role as facilitating the learning process, and the student is indeed in a better learning position if actively involved In the learning process, for reasons earlier highlighted.

5.1.4 The Students

The major student reactions have been highlighted in chapter II. However, in addition, the natural reaction of students is to feel that the teachers are making him/her do much of their work (the teachers). A feeling of distance and separation

from the core of activity is also a natural deterrent. The lack of hands on experience may make the online student feel inadequate or incompetent.

5.2 REACTIONS OF WMU STAFF AND STUDENTS

A major consideration in the WMU's case is the fact that unless some special arrangements are made, the field study programme, which many students look forward to, may no longer be a part of the training. This is a disincentive. Related to this, is the fact that to many students from developing countries, travel to Sweden is very important, and cannot be negotiated for anything. In fairness, the experience in Sweden is as important to most students as is the programme of study, if not more so.

In responding to the questionnaire issued for the survey earlier mentioned, a handful of the students made additional useful comments. These responses can be generally grouped as follows:

The not very enthusiastic

The fear of the likelihood of the loss of the human touch or relation as well as the multicultural and multinational values in Internet education was expressed.

The limitations arising from low Internet connectivity and the non-familiarity with the Internet were also raised.

The cautious/Careful

The need for the university to increase its efficiency by increasing its academic staff strength was raised. This is especially true since the use of WEMS is expected to increase the student population.

The improvement of student-staff relationship was raised, and the author is of the opinion that this is very relevant in view of the need for a support structure for the online student.

The need for improved connectivity in the recipient nations was stressed.

The enthusiastic

It was agreed that WEMS could be a revolutionary breakthrough in educational development which in the long run would be more economical and massively capable of achieving large quantity of trained personnel, while of quality issues and effectiveness of education through WEMS will be left on the development of WEMS itself.

Again, it was agreed that WMU WEMS will positively impact on students' self esteem and self confidence.

It was expressed that financing the WMU WEMS should be resolved on the basis of user pays, being the ship owners and developed countries, given that developed countries handle more than 80% in value of the world trade, and that labour is supplied by the developing countries.

It is agreed that computer literacy programmes can greatly enhance reliance on computer for education and training. If viewed in much the same way as the English Study Skills Programme (ESSP), locally organised computer literacy programmes will aid not only maritime education but a lot of other areas as well. Furthermore, it is agreed that the average student in a developing country would be more comfortable when he/she has more exposure to computers.

It is also agreed that the WMU will upon establishing a WEMS, be able to offer different levels of education and the seafarers will have access to further education that they could not have due to absences and seafaring.

5.3 REACTING TO THE REACTIONS

Though several of the observed reactions appear positive, one cannot rule out the unexpressed fears and resistances, in addition to the negative and conservative expressions. Several students and a few staff are unclear as to the changes to be brought about by the transition, what benefits are accruable from same, and where the present staff and school structure will stand in a new dispensation. These are normal expressions of the inner fear of change, fears and resistances that have to be dealt with appropriately.

In managing and addressing reactions to change, a basic understanding is that there will definitely be a matter or matters to be tackled. Genus (1998, p.53) wrote:

> There needs to be recognition of a possible tension. This may be between the apparently altruistic concepts of flexibility and learning, the logical pursuit of which seems unquestionable, and practices for enhancing these capabilities which may represent vehicles for serving the interests of particular groups within organisations.

Change imposes new demands and problems irrespective of the causes of such changes, and a vital function of management is the maintenance of the awareness of such changes and the preparation of responses to them (Naylor, 1999, p.7).

Naylor (1999 p.460) further suggested several actions to overcome resistance to change, and these are summarised below.

Communication

Not many people have a clear, realistic understanding of how they, and their jobs, would be affected by the change. It is therefore ideal to increase the number of team meetings, briefings, newsletters and so on. It is often necessary to apply communication in combination with other options to overcome resistance to change

as relying solely on it will be effective only if the resistance to change arises mainly from lack of information, especially if the dispute is over facts.

Facilitation and Support

This is especially valuable when resistance arises, as often is the case, from feelings of fear and anxiety. Staff may have concerns about having to change the ways in which tasks are performed or even role changes. For those incapable of making the switch, managers will do well to ensure that there are alternative roles available.

Participation and Negotiation

This seeks to overcome resistance by including those affected by the change in the decision-making process. Instead of a focus in facts, these attempt to overcome negative feelings and beliefs and respond to value differences. Participation seeks solutions that result in all parties benefiting, and involves drawing members into discussions about change, soliciting their opinions and the delegation of decision making to individuals and groups. Managers should reserve the right to make the final decisions. Negotiation however, is a more formal bargaining between parties, each recognising the power of the other to influence events. A gain for one party almost means a loss for the other.

Manipulation

Managers anxious to get their way practice this, and it involves controlling the flow of information and other resources to increase the chances of success. The more significant opponents to change can be drawn to the process through attractive appointments which help to dampen their opposition and they are later unable to claim that they were not consulted. This is known as co-optation.

Coercion

This is the managers' use of their power to force changes and those who do not cooperate are faced with sanctions which may include loss of prospects, unfavourable transfers or even the loss of the job. This method is often used as a last resort but may be necessary in crisis situations. Some companies, frustrated by the lack of adaptation to changing circumstances, appoint senior managers reputed to be 'hatchet wielders'.

Whatever means are to be considered, it is worth noting that the success of any venture will depend largely on the commitment of the persons who are responsible for the implementation of the policies and decisions that are designed to propel the organisation into the realisation of its objectives. People who are unhappy with a decision are not likely to be committed to it, and the opinion of the author here is therefore that more involving and less coercive methods are more likely to yield the desired results in the long run. The benefits accruable from the establishment of a WMU WEMS are more than enough in themselves to encourage any well informed person to cooperate with the objectives, clear communication and allaying fears will go a long way in eliminating resistance. Rowntree (1992, p.264) is of similar opinion, and his suggestions include that whoever is in charge of implementing a distance learning programme should do the following:

- Carrying out thorough and regular briefing of staff
- Supplying relevant documents to persons for whom they may be beneficial
- Provide written guidance on the role of staff to them
- Encourage staff to gain experience in their roles, examples being that writers can tutor and support staff can help in the preparation of material
- Agree on humane rules for the exchange of critical opinions concerning other people's teaching materials or support activity i.e. this may be done through team leaders or in face-to-face discussions rather than in public
- Encourage the expression and comparison of experiences by holding regular evaluation or feedback sessions
- Expect and encourage all staff to contribute to team meetings.

- Have a regular newsletter in which staff can report experiences, pass on tips and even seek advice
- Put up a notice board physically or electronically
- Organise social gatherings
- Talk to people

5.4 SUMMARY

The commencement of a distance learning programme by means of the Internet, though a noble venture, in the interest of the global maritime community and more especially developing nations, is likely to meet with resistance. The forms of such resistance include the human, the financial, the technical and social, amongst others. In the case of humans, in this case students, instructors and the managers of the institution, much of the resistance would be absent if everybody was convinced that the change would ultimately augur well for them.

In many of the cases, the confidence that this would be the change will ultimately be in the favour of the staff and students is altogether absent in the institution, especially where the change is more a result of necessity or pressure, and the institution would not normally have thought about embarking on the change if it had a choice, at least not at the point in time. In this case the institution is simply unprepared, and embraces change more because it is seen as a better chance of survival.

Fortunately, the introduction of a Web Education Management System by the World Maritime University is not borne out of the need to survive, but rather results from the fact that the institution is thriving well enough within the ambits of its responsibilities to consider improving its outreach. The pressure on the university is to save a situation, and not to save itself.

There are indeed mixed feelings within the system, but there are more positive indicators than otherwise. Besides, many of the reservations concern those issues

that can be addressed, and those that are beyond the university can be circumvented as much as is practicable. The modes of these circumventions will be discussed in the next chapter – conclusions.

CHAPTER SIX

CONCLUSION AND RECOMMENDATION

6.1 INTRODUCTION

The study undertaken in the previous chapters has considered the computer and the Internet as communication and Information tools and their usefulness for education and training. The use of these tools for distance education has been examined and their suitability to complement or even replace the traditional modes of learning. The relevance of this to the objectives of the World Maritime University and the applicability have been considered, and the conclusions and recommendations arising from the study are presented below.

6.2 CONCLUSIONS

6.2.1 Hypotheses

Hypotheses were tested in chapters 3 and 4, and the testing was done by survey of a population of 96 students, from which 44 responses were received, giving a 45.83 percent response rate.

As seen in chapter 3, results of the survey easily reveal that:

- The Internet is not well established in developing countries
- The use of computer-based training is not widespread in training institutions in developing countries
- Computer and Internet access is not easily affordable in developing countries
- It will be necessary to take certain special measures to be able to maximize outreach in most developing countries.

The survey did not establish that the average student in developing countries is not comfortable learning by computers.

On the other hand, it was also revealed in chapter 4 that:

- The WMU is focused on improving maritime standards especially in developing nations.
- The WMU will increase its efficiency by reaching more potential students.
- The growth of the maritime industry demands that WMU reach more students than it presently does.
- Internet aided education will enable the university to reach more students, who will be able to learn at a distance.
- Developing countries really need to have better access to the WMU and similar institutions.
- The benefits accruable from better training in the global maritime industry far outweigh the efforts and challenges facing WMU's Internet based education.

6.2.2 Inferences

The indication is therefore that the World Maritime University will do well to incorporate an Internet based Distance Learning system, though it should be prepared to meet the challenges highlighted, which include the fact that its target population will be difficult to reach, owing to underdevelopment of facilities and infrastructure in these locations to support Internet based learning, and where they do exist, they are inadequate to support it on an individual basis, as presented in chapter 3.

The online student can and should be assisted to adapt to the rather new e-learning mode, though this requires efforts from the institution and the instructor.

The use of a Web Education Management System will be well founded if the considerations of sustainability for the university, the student and the target nations are well incorporated into the planning, implementation and continuous improvement schemes.

The World Maritime University really is in a position to embrace distance education in order that the principles of safety of navigation, the protection of life, property and the marine environment are further entrenched in the developing countries. The increased outreach of the WMU will improve the quality of decisions in favour of these principles.

Financial

The inability of the developing nations to fund the education and necessary infrastructure will also have to be considered, and hence the source of funding. It is hoped that this will not be a hindrance to the university achieving its objectives. The relationship between this and connectivity is stressed in chapters 2 and 3. The present reach of the World Maritime University is achieved by funding in most part from developed countries, and an outreach by Internet based learning will be more financially demanding.

Another aspect of the cost factor is the training and development of staff of the university and employment of more staff for the WEMS as well as the maintenance of the resultant increased staff and equipment strength.

Social

The peculiarities of the different localities and attitudes to learning are also vital, since the education acquired is to be used locally, and the trained persons may also be expected to retrain others locally.

The Human Responses

The forms of such resistance already highlighted include those of persons who are stakeholders in the development of a WEMS in the university and are simply typical reactions to change. These will be allayed if the advantages of the exercise are laid out, and the issues of uncertainty arising from the change are addressed. The feelings within the system basically are concerned with what has to be put in place before such an exercise can be embarked upon, or what is necessary for the

smooth running of the exercise, and it is inferred that a systematic approach which is cognizant of the requirements and which is well communicated, is a key element in the solution.

Support for Students

Internet based teaching must make provisions for a thorough and insightful support structure for largely independent study (Thomas, et al 1998 p.150). It has been stressed that the distant student will need more attention and motivation to remain on the programme and with the desired pace.

6.3 RECOMMENDATIONS

The following proposal is made in view of the foregoing chapters and the conclusions drawn from them. They are cognizant of the objectives of the World Maritime University (WMU), the advantages accruable from a Web Education Management System (WEMS), the relevance of the WEMS to the objectives of the WMU, the challenges that are inevitable in mounting a WEMS for the use of training in developing countries, the place of the staff and students in this change, and finally the inevitability of having to improve the university's outreach in the interest of its founding objectives.

Proposal

It is hereby proposed as follows:

- That the World Maritime University (WMU) should embark on the mounting of a Web Education Management System (WEMS).
- That the WMU should embark on a mass education of the staff and students (including prospective ones) on the benefits of WEMS and its relevance to the WMU objectives as well as allay the fears and doubts that may exist.

- That the WMU should consider its intranet as a good model for the WEMS, hence the WEMS structure should take certain of the qualities with some improvements which will permit interaction, communication and some necessary modifications by students.
- That the WMU should embark on a staff training drive to adapt staff to Internet teaching and support, and recruitment to increase the number of staff to meet the needs of a web education system.
- That the WMU should increase the number and quality of academic staff in the principle of continuous improvement, and especially as the WEMS will demand a higher instructor to student ratio.
- That the WMU should approach the International Maritime Organisation and the donors for its present programmes to source for and ensure sustainable funding for the programme.
- That the WMU should involve ex students located in various countries and intimate them with the need for the development of a WEMS. The inputs of these ex students should be sought as to what the peculiarities of the local learning environment is, and what approaches are to be taken locally to ensure the success of the programme.
- That the WMU should commence the programme slowly, and should really start with some pre-enrolment modules, and should gradually improve upon this position.
- That the WMU should also consider using the WEMS for the delivery of its professional development courses in order to ensure increased participation even in developed countries.
- That the WMU should also consider the use of WEMS for preparatory modules for the English and Study Skills Programme (ESSP), especially as majority of students undergoing this are from the more developed Asian countries.
- That even if the WMU proceeds to fully implement the WEMS, the field study element should be retained, as well as some modules that will be best delivered with physical contact between the student and the institution(s).
- That in view of reduced connectivity in the target areas, the WMU should liaise with regional and other maritime academies and other government

facilities with established Internet connectivity to serve as outreach centres for the programme, especially as according to apc.org “Shared/public access and the use of corporate networks is continuing to grow [in Africa] at greater rates than the number of dialup users”

REFERENCES

Anderson, T (1999). *Interaction Options for Learning in the Virtual Classroom*. Academic Technologies for Learning, Faculty of Extension, University of Alberta, Canada.(On benefits of asynchronous Interaction). Retrieved July 22 2002from the world wide web. http://www.atl.ualberta.ca/articles/disted/interact_options.cfm

Apc.org (2001). *African Internet Conectivity*. Retreived August 26 2002 from the World Wide Web. http://www3.wn.apc.org/africa/afrmain.htm

Australian Maritime College *Distance Learning Courses*. Retrieved July 6 from the world wide web. http://www.amc.edu.au/Prospective_Students/Modes_Of_Study/modes_of_study.html

Beizadea, H., & Udrea, M (2000). New Methods and Techniques of Profesional Training and Their Part in Achieving Safe Ports. *Eleventh International Conference on Maritime Education and Training. August, 2000*. p. 180-186 Malmö, Sweden: A Conference of the International Maritime Lecturers Association. World Maritime University.

Bianchi, R. A. C (2000). *A Space Odessey*. Arthur C. Clarke Unofficial website. Retrieved August3 2002 from the world wide web. http://www.lsi.usp.br/~rbianchi/clarke/ACC.Homepage.html

Blackboard.com. *Blackboard Products*: Blackboard e-Education Enterprise Suite. Retrieved July16 from the world wide web. http://products.blackboard.com/

Boxmind.com. *A Revolution in Education*. Retrieved July 16 2002 from the world wide web. http://www.boxmind.com/

Bradley, I (1989). *Knowing the ropes*. Oral History Archive, Merchant Navy. Retrieved July 4 from the World Wide Web. http://www.spectec.co.uk/salfordquays/oral/oh2-1.htm

Burges, M.A.F, Baranauskas M.C.C . (1998). A User-centered approach to the design of an expert system for training. *British Journal of Educational Technology vol.21 No. 1* 25-34. UK: Blackwell Publishers. cccins.camosun.bc.ca. *Babbage's Analytical Engine*. Retrieved July 6 from the world wide web. http://ccins.camosun.bc.ca/~colesr/computer/babbage.htm

collies, B. (1999). Designing for differences: cultural issues in the design of WWW-based course-support sites. *British Journal of Educational Technology. Vol.30 No. 3,* 106-117

Coventry, L (1997). *Institute for Computer Based Learning.* Heriot Watt University, Edinburgh. Retrieved July 18 2002 from the world wide web. http://mvc.man.ac.uk/SIMA/video3/contents.html

Cisler, S (2001). *The Internet and Indigenous Groups*. Retrieved June 24 from the world wide web. http://www.cs.org/publications/CSQ/csqinternet.html

Cwilewicz, R. Tomczak, L (2000). Computers Based Training (CBT) – Interactive Programs Application in Maritime Education and Training. *Eleventh International Conference on Maritime Education and Training. A Conference of the International Maritime Lecturers Association.* August, 2000. p132-139. Malmö, Sweden: World Maritime University.

De Colmar, T. *The Arithometer*. Retrieved July 26 2002 from the world wide web. http://www.llcc.cc.il.us/dbeverid/colmar1.htm

Demet, D. G (2001) *A space odeyssey*. Retrieved August 1 2002 from the world wide web. http://www.palantir.net/2001/

Distancelearn.about.com. *Online Training: Part 1 - Online training for business and more*. Retrieved August 3 2002 from the world wide web. http://distancelearn.about.com/library/weekly/aa103000a.htm

Ellsworth, J. H (1994). *Education on the Internet: A Hands-on Book of ideas, Resources, Projects, and Advice*. Inianapolis, U.S.A: Sams Publishing

Farrell, M. G. (1999).*The Development of Virtual Education: A global perspective*. The Commonwealth of Learning. Retrieved August 3 2002 from the world wide web. http://www.col.org/virtualed/chapter1_intro.pdf

Garrison, D. R (1989). Understanding Distance Education: A Framework for the Future. London, New York: Routledge.

Genus, A (1998) *The Management of Change: Perspectives and Practice*. London: International Thomson Business Press.

Gottschalk, T.H (ed.)(2002). *Strategies for Teaching at a Distance. Distance Education at a Glance #2*. Engineering Outreach, College of Engineering, University of Idaho. Retrieved June 16 2002 from the world wide web. http://www.uidaho.edu/evo/dist2.html

Hials.no. *FUMAR*. Retrieved August 2 2002 from the world wide web. http://www.hials.no/fumar/

History of the Internet.com *History of the Internet*. Retrieved June 2 2002 from the world wide web. http://www.historyoftheinternet.com/chap2.html

Hong K, Lai, K. and Holton, D. (2001). Web based learning environments: Observations from a Web based course in a Malaysian context. *Australian Journal of Educational Technology* 17(3), 223-243.Retrieved July 16 2002 from the world wide web. http://www.ascilite.org.au/ajet/ajet17/hong.html

Horton, S (2000). *Web Teaching Guide: A practical approach to creating course web sites*. New Haven and London: Yale University Press

Huggins, K (1998). *Distance Learning Methods and Technologies: Benefits to the maritime industry and developing countries*. Unpublished Master's thesis. World Maritime University, Sweden.

International Telecommunication Union (1999). *Challenges to the Network: Internet for Development*. Retrieved July 2 2002 from the world wide web. http://www.itu.int/ITU-D/ict/publications/inet/1999/ExeSum.html

Jegede, O, Gooley, A, Towers, S (1996). *Evaluation Of A Professional Development Program For Audiographics Conferencing*. Retrieved July 18 2002 from the world wide web. http://www.lnq.net.au/papers/agreport.htm

Kheong, L. T (1993) *The Use of Distance Learning in Maritime Education and Training for Malaysia*. Unpublished Master's thesis, World Maritime University, Malmö, Sweden.

Llewellyn, M (2002). *History of computers*. Retrieved June 26 2002 from the world wide web. http://www.edu.pe.ca/montaguehigh/grass/comp/HistComp/mikel1.htm

Marketingterms.com. *E-mail*. Retrieved July 22 2002 from the world wide web. http://www.marketingterms.com/dictionary/email/

Maryland State Department of Education (1997). *Visual Imagery*. The School Improvement in Maryland.. Retrieved July 6 2002 from the world wide web. http://www.mdk12.org/practices/good_instruction/projectbetter/thinkingskills/ts-81-82.html

Maxfield, C, Brown, A (1998) *An Unconventional Guide to Computers*. Maxfield & Montrose Interactive Inc., Alabama, USA. Retrieved July 27 2002 from the world wide web. http://www.maxmon.com/byteinfo.htm

McAteer, E, Harris, R (2002). *Computer Mediated Conferencing*. LTSN The Generic Center. Learning and Teaching Support Network. Retrieved August 1 2002 from the world wide web. http://www.ltsn.ac.uk/genericcentre/projects/elearning/

Mc Dermot, A.P et al (2000). Internet Based Learning for Marine Related Continuing Professional Development. *Eleventh International Conference on Maritime Education and Training. A Conference of the International Maritime Lecturers Association*., August, 2000. p143-156. Malmö, Sweden: World Maritime University.

McNay, I (1987) "Organisation and Staff Development" in M. Thorpe & D. Grudgeon (Eds.), *Open Learning for Adults* (pp. 12-20). Essex: Longman Group UK Limited.

Moody, G (1996). *The Internet with Windows*. Oxford: Butterworth Heinemann Ltd.

Muirhead, P (2002a). *The Virtual Classroom - Connections For Learning*. Distance Learning: Slides Notes and Readings. Unpublished lecture handout, World Maritime University, Malmö, Sweden.

Muirhead, P (2002b). *IT in Education and Training*. Paper presented at a Seminar on Information Technology (IT) In Shipping. June 6 2002. World Maritime University.

National Centre for Adult Literacy: *National Technology Laboratory for Literacy and Adult Education. TECH21*. Retrieved June 6 2002 from the world wide web. http://www.tech21.org/

Navassardian S, Marinov M, Pavlova, R (1995). Investigations in the quality and efficiency of instructive computer-aided training. *British Journal of Educational Technology*. National Council for Educational Technology. *Vol 26 no. 2,* 109-121. UK: Blackwell Publishers.

Naylor, J (1999) *Management*. Harlow, England: Financial Times Professional Limited

Netforbeginners.com. *Electronic mail*. Retrieved July 19 2002 from the world wide web.http://netforbeginners.about.com/library/glossary/bldef-email.htm

Nettskolen.com. *CISEAR: Courses on the Internet:: Survey, Analysis, Evaluation, Recommendation*. Retrieved July 27 2002 from the world wide web. http://www.nettskolen.com/in_english/cisaer/additions.htm

Netsizer (2002).*Current Stats for Top Internet Penetrated Countries: (Number of Internert Hosts and Internet Users (in thousands)*. Retrieved August 26 2002 from the World Wide Web. http://www.netsizer.com/daily/TopCountry.html

Newsarchive (2001). *Internet And Education: virtual classrooms for everyone? 17 May 2001,World Telecommunication Day. The Internet: challenges, opportunities and prospects.* Retrieved July 1 2002 from the world wide web. http://www.itu.int/newsarchive/wtd/2001/FeatureEducation.html

Okonna, K. O (2001).*Web Based Distance Learning Management Systems: An Investigation Into WMU's Future Needs*. Unpublished Master's thesis, World Maritime University, Malmö, Sweden.

Penn State Distance EduCation Centre. *Innovation in Distance Education (IDE) (2002). An Emerging Set of Guiding Principles and Practices for the Design and Development of Distance Education.* Retrieved June 12 2002 from the world wide web. http://www.cde.psu.edu/DE/IDE/guiding_principles

Race, P. (1989). The Open Learning Handbook: Selecting, Designing and Supporting Open Learning Materials. New York: Cogan Page, London/Nichols Publishing.

Rowntree, D. (1990). *Teaching Through Self-Instruction: How to Develop Open Learning Materials*. New York/London : Kogan Page Limited/ Nichols Publishing

Rowntree, D. (1992). *Exploring Open and Distance Learning*. London: Kogan Page Limited

Rumble, G (1986). *The Planning and Management of Distance Education*. New York: St. Martins's Press.

Sale, T (1998). *The Colossus: Its Purpose and Operation*. Retrieved from the world wide web. http://www.codesandciphers.org.uk/lorenz/colossus.htm

Sewart et al (1988). *Distance Education: International Perspectives*. London/New York: Routledge.

Silverman, D (2000). *Doing Qualitative Research, A practical handbook*. London: Sage Publication

Sproul, N. L (1988). *Handbook of Research Methods*: A guide for practitioners and students in the social sciences. London: The scarecrow press.

Stanford University. *What do users do on the Internet?. The Internet Study: More Detail*. Retrieved July 21 2002 from the world wide web. http://www.stanford.edu/group/siqss/Press_Release/press_detail.html

Studyweb: *Links for Learning. The lightspan Network*. Retrieved June 28 2002 from the world wide web. http://info.studyweb.com/

Superconductors.org. Superconductor. Retrieved June 29 2002 from the world wide web. http://superconductors.org/INdex.htm

Tan, D. G (1999) *The Virtual Classroom Afloat – Maritime Education and Training in the 21st Century: An Investigation into the Feasibility and Practicability of Distance Learning via the Satellite Communication System*. Unpublished Master's thesis. World Maritime University, Sweden.

Tech Encyclopedia. *Virtual Reality*. Retrieved June 30 2002 from the world wide web. http://www.techweb.com/encyclopedia/defineterm?term=Virtual+Reality&x=31&y=7

The Open Learning Unit. *The Centre for Advanced Maritime Studies (Scotland)*. Retrieved July 8 2002 from the world wide web. http://www.camsedin.org.uk/Learning/learning.html

The World Bank Group (2002). *Data and Statistics*. Retrieved 20 July, 2002 from the World Wide Web http://www.worldbank.org/data/countrydata/countrydata.html

Thomas, P etal (1998). A Holistic Approach to Supporting Distance Learning Using the Internet:: Transformation, not Translation. *British Journal of Technology. Vol 29 no. 2 April 1998*, 149 – 161. UK: Blackwell Publishers.

Universityalliance.com. *The University Alliance*. Retrieved July 27 2002 from the world wide web. http://www.universityalliance.com/scripts/PageGen/PageGen.asp?id=62

University of California, (2000). *Distance Learning and the Internet - Discussions: Are Schools Ready for Distance Learning and the Internet?* Retrieved August 2 2002 from the World Wide Web. http://www.usc.edu/isd/locations/cst/dlconference/disc3c.html

University of Connecticut. *Virtual Classroom*. Retrieved May 29 2002 from the world wide web. http://virtual.class.uconn.edu/

University of West Indies, Department of Computer Science, Mathematics and Physics. *Historical Overview of computer systems*. Retrieved June 7 2002 from the world wide web. http://scitec.uwichill.edu.bb/cmp/online/cs11k/history.html

WebCT. *Software and Services*. Retrieved June 2 2002 from the world wide web. http://www.webct.com/entrypage

Webopedia (1997). *Netmeeting*. Retrieved may 26 2002 from the world wide web. http://www.webopedia.com/TERM/N/NetMeeting.html

Western New England College. *Continuing Education. WNEC Online: How does it work?.* Retrieved July 18 2002 from the world wide web. http://www.online.wnec.edu/

Western New England College. *The Manhattan Virtual Classroom*. Retrieved July 16 2002 from the world wide web. http://manhattan.sourceforge.net/

Westwood Online: *Westwood College of Technology*. Retrieved August 4 2002 from the world wide web. http://www.westwoodcollege.com/?source=sprinks

Wishart, J. Blease, D (1999). Theories underlying perceived changes in teaching and learning after installing a computer network in a secondary school. *British Journal of Educational Technology. Vol. 30 No. 1,*25 – 41.