A Comparative Analysis of the IAMU Member Schools to Teach and Test Proficiency in Maritime English

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ABSTRACT

The English language has been adopted as the official language of communication in the air and maritime industries. Despite international agreement to use English, there have been many difficulties in teaching, and assessing the outcomes of the teaching of Maritime English for decades. Some research has been conducted to examine these difficulties in the airline industry and the maritime industry. There exist some cross discipline training techniques stemming from this research based upon the theories and techniques in Crew Resource Management (CRM), Bridge Resource Management (BRM), and Space Flight Resource Management (SFRM).

Parallel to the teaching and assessing problems, there have also been many difficulties in reaching a training and testing proficiency in English communication that meets the international standards of the STCW 95 requirements in the maritime industry. The complexity of language and barriers of cultural communication have been experienced as potential problems by multinational crews.

This paper concentrates upon the difficulties of teaching and assessing the outcomes of the teaching of Maritime English at the Member Schools of the International Association of Maritime Universities (IAMU). A positioning model is developed to identify and measure the positions of the IAMU Member Schools in comparison with each other. A multidimensional scaling technique of the multivariate data analysis is used to analyze the data received through questionnaires. The results of the analysis indicate the relative positioning of the IAMU Member Schools in teaching and testing proficiency in Maritime English. This information provides the foundation upon which the model of this research is built. Consequently, some strategies based upon the results of the analysis are developed to reduce the problems and difficulties in this context.

1. Introduction

Several factors have contributed to the seemingly sudden focus on the crisis in Maritime English training worldwide. In addition to the obvious demands of STCW 95, there is the shift in accident analysis from the mechanical to the human factor; an increase in multinational maritime crews; and a public focus on maritime accidents that increasingly jeopardize human lives and the environment.

The International Convention of Standards of Training, Certification and Watchkeeping for Seafarers, 1978 (STCW) concentrated on technological improvements (construction quality and improved equipment) rather than on human factors, training and operating procedures. Jennifer Kiefer, a contractor with the U.S. Coast Guard s Human Element and Ship Design Division, reminds readers of <u>Proceedings of the Marine Safety Council</u> it was the Americans who formally proposed at the IMO s December 1992 Maritime Safety Committee (MSC) meeting that the 1978 Convention be reviewed with a focus on the role of the human element in maritime casualties (Kiefer 31). With mounting evidence that the human element was the major cause of accidents, a two and a half year review resulted in amendments adopted in July 1995 (to come into full implementation in 2002). The human factor, and especially competence in English, which had been established as the lingua franca of the maritime industry as early as the 1978 Convention, emerged fully.

In the early section of this study, a literature survey and a description of the current situation regarding the difficulties in Maritime English are reviewed. A hypothesis is developed regarding the IAMU Member Schools to follow some guidelines to reduce the difficulties in Maritime English at Member Schools using English as a foreign language. In addition, a model is developed in the following section to identify specifically the positioning of the IAMU Member Schools with respect to each other. The results of the analysis of the model are discussed both in terms of their operational implications as well as of their methodological ones.

2. Literature Survey

In the early 90s, the US Department of Transportation (USDOT) and the US Coast Guard (USCG) were working on human factor studies that culminated in the 1995 report People Through People (PTP). Evidence supported that over 80% of all maritime accidents worldwide was the result of human error, yet the majority of maritime safety resources focus on eliminating accidents by reducing material failures and system problems" (PTP 5). Two government offices, Marine Safety, Security and Environmental Protection and Navigation Safety and Waterway Services, spearheaded a long-term strategy that refocused prevention efforts based on awareness of cause by human error. The plan, it was recognized early on, would have to be participatory, systematic, and non-regulatory in its learning-implementation approach. Because risk management is a responsibility shared by governments, industry, classification societies, and mariners, all parties had to work cooperatively.

2.1 Current Situation

That same principle is working now in the International Association of Maritime Universities (IAMU) to focus on and collectively improve the teaching of Maritime English for maximum effectiveness. Work Group III of IAMU under Professor Malek Pourzanjani is now addressing the issue of the teaching of Maritime English at IAMU schools and plans to develop a model course as well as address the issues of training current seafarers already serving the world fleets. To establish a baseline for where we are now, it was decided at the Group III meeting in Istanbul in March 2002 to conduct a survey of how IAMU MET schools are currently teaching Maritime English. The survey vehicle used was developed by a work team* at Maine Maritime Academy that had been working independently on the issue of improving the instruction of Transportation English for the NASA International Space Station. The survey was modified for IAMU use and distributed via e-mail during spring 2002.

The difficulties of teaching and assessing the outcomes of the teaching of Maritime English have been recognized for over a decade by IAMU Member Schools and others represented by the participants in annual conferences of the International Maritime Lecturers Association (IMLA). Many entities are now working on the problems. For example, Istanbul Technical University Maritime Faculty, with the assistance of the Japan International Cooperation Agency conducted an International Seminar on Maritime English in March 2002. Currently, the Tokyo University of Mercantile Marine (TUMM) plans to work with IAMU and the Association of Maritime Education and Training Institutions in Asia Pacific (AMETIAP) on a three-year program to establish a model program for teaching Maritime English.

As a baseline to work from, we propose to identify where we are now. Hence we have analyzed a survey conducted among IAMU Member Schools to establish a positioning model to identify and measure the positions of the current status of how we teach Maritime English. A multidimensional scaling technique of the multivariate data analysis was used to analyze data received from the returned questionnaires. The results of the analysis indicate the relative positioning of the IAMU Member Schools in teaching and testing proficiency in Maritime English. Consequently, some strategies to improve the teaching and testing of Maritime English will be proposed. The Maine Maritime Transportation English Group has already established several hypotheses that they would like to test in the development of a model for the effective teaching of Maritime English. The survey analysis establishes a baseline for the model.

While the hypothesis was presented both at the Work Group III session in Turkey in March 2002 and to colleagues at the International Seminar on Maritime English, we present it again here in conjunction with the analysis of the IAMU Survey on the Current Status of Teaching Maritime English at participating IAMU Member Schools.

2.2 Hypothesis

Based upon the findings of the 1999 MARCOM Report (The Impact of Multilingual and Multicultural Crewing on Maritime Communications), we presumed that a proposed model for teaching and assessing Maritime English for the various IAMU schools would have to be flexible on both ends of the educational continuum; that is, on the entry end and the exit end. Both ends of the continuum are moving targets. Each school must establish its own level of

beginning English proficiency (recognizing there are many variables from one country to the next), but a general level can be agreed upon before the student can enter the specialized Maritime English phase of training. Then on the exit end, the schools will have to develop a standard for proficiency until an international standard satisfying STCW 95 goals is in place.

The findings of the MARCOM report were that one Maritime English syllabus would not meet all needs for various reasons. For example:
- in some countries students are separated into nautical and engineering tracks and have different English syllabuses depending on the track and level
- in other countries one English classroom has students from both tracks as well as students with technical backgrounds, perhaps even students returning for upgrades, with years of sea experience and possibly a few fishermen as well.
- Class sizes may vary from 5 to 60, etc.
(MARCOM, Vol. 2, pp.76-84)

In addition, there was no consensus among respondents to the MARCOM questionnaires about what Maritime English is, let alone how it should be taught. Some accepted the Standard Marine Communication Phrases (SMCP), but most agreed that these do not meet all needs. In fact, at the Asian Shipowners Forum: Seaman s Committee in Hong Kong in November 2000, delegates argued that the SMCP should be completely reorganized to be a useful reference document. They suggested that the length be reduced to contain only essential operational and safety-related marine communication phrases. Further, they suggested that rather than mariners genuinely learning to communicate in English, instead they were learning phrases by rote and not understanding the meaning, thereby leading to less than safe communication.

While the MARCOM report found it unlikely that one Maritime English syllabus would suffice, they nevertheless offered a thorough outline of areas of content that should be covered. Our work group sees the outline as a solid foundation for both oral and written case studies to supplement SMCP as content for a Maritime English course. We have adopted the following hypothesis for the establishment of a working syllabus for the teaching and testing of Maritime English at selected IAMU schools.

We propose three stages for the study:
- First, a questionnaire to establish current practices for the teaching of Maritime English
- Second, the selection of control group schools to follow our proposed syllabus and procedure
- Third, outcomes assessment compared between control group schools and other schools attempting to comply with STCW 95 goals.

Our hypothesis is as follows:
Hypothesis: The teaching and testing of Maritime English will be most successful if the control group schools follow these guidelines:
- Immersion in Maritime English experience; ideally the maritime specialty instructor(s) is also the Maritime English instructor as in the ITUMF model of captains who had also completed IMO Model Course 6.19.
- If the former situation is not possible, the next choice would be a team of an experienced maritime instructor and a native speaking English instructor teaching the specialty simultaneously.
- Preferably, English technical training vocabulary be used at the outset to avoid the tendency to revert to the first language in a crisis.
- Listening and speaking skills should be emphasized above others in simulation situations, especially simulated stress situations.
- Native English speakers should be utilized, in person or via audio streaming on the Internet, CD-ROM, etc., as often as possible in case studies.
- Maritime English Teaching (MET) content be derived from field testing at control group IAMU schools as opposed to textbook theory.
- MET content and methods be standardized insofar as possible from field experience at the control group schools.
- Teaching materials be affordable, accessible, shared globally through developed Internet systems.

Recognizing that people learn differently, we support current pedagogical practice that mixes various approaches so that all types of learners are served. The content, learner, and the platform should accommodate the following learning styles: tactile, visual, auditory, factual, creative, sequential, non-linear, individual, collaborative. The development of e-learning platforms among IAMU Member Schools will facilitate serving the various learning styles in a financially feasible infrastructure.

3. Quantitative Approach and The Model

A conceptual model is developed in this section to illustrate and explain the key elements and their relationship affecting the positioning model. These key elements are converted to measurable variables for testing the hypothesis. The key elements represent the characteristics of different IAMU Member Schools. Data of these schools were received through questionnaires as per attached in Appendix 1, of a survey conducted by the Transportation English Working Group at Maine Maritime Academy, as noted earlier. A conceptual model of the positioning model representing the current and comparative situation of the IAMU Member Schools to teach and test proficiency in Maritime English is illustrated in Figure 1. The conceptual model is derived from a similar study, which was conducted earlier, on shipping services using a similar multivariate approach (Yercan).

The positioning model provides a framework for the comparison of IAMU Member Schools in Maritime English. The main hypothesis of the model is presented below. This model is operationalized in the following section, using the multidimensional scaling (MDS) technique of the multivariate data analysis. Data from IAMU Member Schools are processed by the MDPREF (MultiDimensional Preference) software program of the MDS(X) Series of MDS Computer Programs, which leads to the illustration, in graphic form, of the positioning of the IAMU Member Schools to teach and test proficiency in Maritime English (Coxon).

Hypothesis: English native speaking IAMU Member Schools and those using English as a foreign language are positioned differently in teaching and testing proficiency in Maritime English, and this is illustrated using a variety of characteristics.

The positioning of the IAMU Member Schools can individually be identified and their comparative positions can be measured accordingly. It is assumed that a differentiation among these groups of Member Schools exists. The hypothesis will be examined in detail in the following section.

4. Analysis, Results and Discussions

This section of the study consists of the methodology of the analysis of the IAMU Member Schools in comparison to each other and the results of the analysis. Some discussions are also given in this section.

4.1 The Methodology of The Analysis

The stages of the methodology of the analysis, which constitute an MDS approach, consists of the required data, method of data collection, selection of questions, collection of raw data, response rate, score ratings of data, application of data into the multidimensional scaling technique, and finally, analysis of data application.

A multidimensional scaling technique is used for the application of data of the IAMU Member Schools into the MDPREF program. Data required for this application include both quantifiable and non-quantifiable characteristics of the Member Schools. Data requirements for this application are based upon the hypothesis developed in the previous section. The collection of data is made through a questionnaire survey based on a 5-Likert scale, which was conducted by the Transportation English Working Group at Maine Maritime Academy. Questionnaires were used as a common method to collect primary data from the Member Schools. 15 out of 35 IAMU Members responded to the questionnaire survey via e-mail. The questionnaire consists of a total of 46 questions. However, data of 42 questions were used according to the type of data received from the Member Schools. This data was disqualified for use in the analysis because a number of requirements have to be met before the data can be analyzed in the MDS. These include the removal of questions where there is insufficient data — i.e. less than half of the Member Schools answered 2 questions, which leads to the removal of these questions based on insufficient data; and 2 more questions were removed because the same answers were received from the Member Schools, which leads to undifferentiated data. Subsequently, raw data were converted into score ratings for application into the software program. Data received from the Member Schools for each question were ranked accordingly.

The input data for the application consists of a 42x15 matrix in which rows are considered as subjects representing 42 variables, the characteristics of the IAMU Member Schools, and columns are considered as stimuli representing 15 different IAMU Member Schools, which responded to the questionnaire survey.

4.2 The Results of The Analysis

The comparative positioning of the IAMU Member Schools is illustrated in this section, as the result from the MDS analysis. Figure 1, which is produced by the output program of MDPREF, presents a summary of the results in two dimensions.

4.2.1 Representation of The Results

Figure 1 is a two dimensional graph representing the similarities and correlations between the IAMU Member Schools in terms of their characteristics regarding teaching and testing proficiency in Maritime English.

Axes of Dimensions

Variables on the axes of the dimensions were derived from the matrix calculated in the output program of MDPREF. The absolute values of score ratings, representing the characteristics of the IAMU Member Schools in these matrices, group together. Therefore, similar variables representing various characteristics of the IAMU Member Schools to teach and test proficiency in Maritime English group as a common characteristic, in general.

The y axis represents a general characteristic that appears to be the most significant one for the IAMU Member Schools on the basis of the results derived from MDPREF. This vertical axis illustrates the correlation coefficients between characteristics of the IAMU Member Schools in general within a range of +100 and —100. Similarly, x axis represents a group of characteristics that appears as the second most significant one for the IAMU Member Schools in this illustration. The range of correlation coefficients for this horizontal axis also varies between +100 and —100. These significant characteristics are depicted by the output program automatically and are derived from the calculated correlation matrix. A number of characteristics representing Maritime English teaching quality and English language skills of students appear to be the most significant characteristics stemming from the automatic calculations of MDPREF. A number of significant characteristics representing Maritime English teaching quality are related to the importance of Maritime English teaching: availability of instructors for Maritime English; availability of teaching materials; availability of courses for students to practice Maritime English; total time spent teaching English; availability of plans to improve the English language skills of instructors; availability of techniques used to develop and improve English language skills of students; and availability of ESL/ESP programs. Similarly, some of the significant characteristics, which represent English language skills of students, are related to previous English language experience; availability of opportunities for students to practice their Maritime English; and availability of native speaking instructors for Maritime English.

Configuration of the IAMU Member Schools

The stimuli, the IAMU Member Schools in this study, are represented as points in a multidimensional space, a two-dimensional space in this case. The configuration of the 15 IAMU Member Schools is illustrated in the figure by points represented by the initial letters of their names. The names of these schools are also listed as a note in Figure 1. It should be noted that there is no dominance or ranking of the member schools; the sequence of the Member Schools, which is given as a note in Figure 1, is based on alphabetical order.

The configuration of the IAMU Member Schools in the figure is based on the MDPREF correlations. IAMU Member Schools having similarities with each other and displaying similar characteristics group together in the figure representing their close positioning and similarity in teaching and testing proficiency in Maritime English. This is also specified this way: when the angle of two vectors, passing through two points and originating from the origin, in an n-dimensional space, becomes smaller, its cosine approaches 1 and this is an indication of high correlation; in the present case, a close similarity between the IAMU Member Schools (Hair *et al*, Chatfield and Collins, and Moinpour *et al*).

Configuration of Characteristics

Variables are denoted by vectors, which represent the characteristics of the IAMU Member Schools (Hair *et al*, 1998). The configuration of the 42 characteristics is derived from the survey conducted by the Transportation English Working Group at Maine Maritime Academy. These characteristics do not dominate each other; however, the sequence of the characteristics is based on the items on the questionnaire. As already indicated, characteristics of the IAMU Member Schools are illustrated according to their correlation coefficients. Various points overlay each other because of the close relationship, reflecting similarities in teaching Maritime English.

4.2.2 The Results

The interpretation of the data consists of the stimulus points, positioned to ensure maximum agreement with the subjects vectors. The interpretation of the position of stimulus points is made according to the spread of the subject vector ends. In Figure 1, the stimuli points representing the 15 IAMU Member Schools are illustrated by AMC-Australian Maritime College, Australia, CMU-Constanza Maritime University, Romania, DMU-Dalian Maritime University, China, DEU-Dokuz Eylul University School of Maritime Business and Management, Turkey, PUC-Polytechnical University of Catalonia, Spain, GMA-Gdynia Maritime Academy, Poland, KSMA-Kiev State Maritime Academy, Ukrania, KUMM-Kobe University of Mercantile Marine, Japan, LJMU-Liverpool John Moores University, U.K., MMA-Maine Maritime Academy, U.S.A., MNMU-Mokpo National Maritime University, Korea, SMMM-National School of Merchant Marine of Marseille, France, OMTC-Odessa Maritime Training Center, Ukrania, RCMS-Rijeka College of Maritime Studies, Croatia, and CMA-The California Maritime Academy, U.S.A. The rest of the points are the subject vectors representing the 42 characteristics of these Member Schools. Their significant representation is based on the data received via the questionnaire survey conducted by the Transportation English Working Group at Maine Maritime Academy, as mentioned earlier. The following are the results from Figure 1:

IAMU Member Schools grouping together represent a close positioning in teaching and testing proficiency in Maritime English because of similar characteristics, i.e. higher correlation.

In general, the IAMU Member Schools in English native speaking countries — Australian Maritime College (AMC) in Australia, Liverpool John Moores University (LJMU) in the U.K., Maine Maritime Academy (MMA), and The California Maritime Academy (CMA) both in the U.S.A., are positioned close together on one side of the map in Figure 1 demonstrating similarities in various fields. These include: majority of students speaking the English language as a native language, and therefore, not having a separate teaching program for ESL and/or ESP — except Liverpool John Moores University — nor for Maritime English; availability of English native speaking instructors, and therefore, unavailability of plans for the improvement of the English language of instructors; availability of courses for students to practice Maritime English; availability of technical manuals of maritime related equipment written in English; unavailability of a standardized international exam for measuring English language proficiency of students — except The California Maritime Academy; unavailability of techniques used to improve listening and reading skills of students in the English language; majority of students between the ages of 18 and 25, etc.

Similarly, the IAMU Member Schools in the countries where the English language is a foreign language, are also positioned close together having similar characteristics to each other. These schools are Constanza Maritime University (CMU) in Romania, Dalian Maritime University (DMU) in China, Dokuz Eylul University School of Maritime Business and Management (DEU) in Turkey, Polytechnical University of Catalonia (PUC) in Spain, Gdynia Maritime Academy (GMA) in Poland, Kiev State Maritime Academy (KSMA) in Ukrania, Kobe University of Mercantile Marine (KUMM) in Japan, Mokpo National Maritime University (MNMU) in Korea, National School of Merchant Marine of Marseille (SMMM) in France, Odessa Maritime Training Center (OMTC) in Ukrania, and Rijeka College of Maritime Studies (RCMS) in Croatia. Similar characteristics, which these Member Schools have, include: students speaking their own language other than English; majority of students having English language experience of either between 2 and 4 years, or more; administrators of Member Schools agree that English is the language of the sea, and therefore, all of these schools — exceptGdynia Maritime University in Poland and Rijeka College of Maritime Studies in Croatia, have a separate teaching program either for ESL and/or ESP or Maritime English or both; having difficulties for students to practice their English and/or Maritime English with English native speakers; availability of development plans for the improvement of the English language of instructors whose native languages are not English; having good or satisfactory proficiency levels of Maritime English for instructors teaching Maritime English or of ESL and/or ESP for instructors teaching English; unavailability of the situation to test oral proficiencies of students in simulated maritime situations; opportunity for students to learn Maritime English at the school and availability of technical manuals of maritime related equipment written in English to help students; availability of techniques used to improve listening, reading and writing skills of students in the English language, but having a lack of providing some opportunity for students to practice speaking English, etc.

Interestingly, some of the IAMU Member Schools position according to the geographical position of their countries. For example, Constanza Maritime University in Romania and Gdynia Maritime Academy in Poland position very close to each other illustrating very similar characteristics and both of these schools are situated in Eastern Europe. Similary, Dokuz Eylul University in Turkey, Rijeka College of Maritime Studies in Croatia and Polytechnical University of Catalonia in Spain, which are geographically situated in the Mediterranean region of Europe, also have

similar characteristics to each other, in general, and this is illustrated in Figure 1 by their close positioning on the map. These results may stem from their similar points of view in terms of cultural and educational issues. Furthermore, another similar situation exists in the similarities between Dalian Maritime University and Mokpo National Maritime University, which are located in Eastern Asian countries — China and Korea, respectively. Their close positioning is also illustrated in the same figure.

IAMU Member School characteristics that group together are similar to each other in a way that matches the explanations provided by Hair *et al* and Chatfield and Collins. Some of the variables representing the characteristics overlay each other by illustrating high similarity, e.g. unavailability of English native speaking instructors and unavailability of the opportunity for students to practice their English at the IAMU Member Schools where English is a foreign language; unavailability of separate teaching programs for ESL and/or ESP or Maritime English and unavailability of technical support for improvement of language skills of students at the English native speaking IAMU Member Schools.

5. Conclusions and Recommendations for Future Research

5.1 Operational Conclusions and Recommendations

A positioning model is developed to identify and measure the positions of the IAMU Member Schools in comparison to each other. The main hypothesis that was tested and accepted by the positioning model of this study is that English native speaking IAMU Member Schools and the Member Schools speaking English as a foreign language demonstrate different characteristics and position themselves in different places on the positioning map. Particularly, this clustering and grouping of the schools take place regarding the provision of technical support for students and the use of the English language as the native language. In the case of not having English native speaking instructors, the Member Schools make efforts to fill this gap at least by providing good or satisfactory ESL/ESP and/or Maritime English teaching programs and technical support for improvement of language skills of students. However, the need for English native speaking instructors is strongly highlighted by the administrators of these schools. These major results largely match the hypothesis developed earlier in this study.

In addition, the results of the positioning model also match the hypothesis, developed earlier in this study, regarding the teaching and testing of Maritime English being successful if the control group schools follow certain guidelines. These guidelines particularly support the idea of a team of experienced maritime instructors and English native speaking instructors cooperating with each other and teaching related courses accordingly; English native speaking instructors being utilized either in person or via audio/video streaming on the Internet or by distance learning programs; using English technical training vocabulary; standardization of Maritime English content and methods; and teaching materials being affordable, accessible, and shared globally through developed Internet systems.

Consequently, some support could be provided by English native speaking IAMU Member Schools to the Member Schools using English as a foreign language. This support could reduce the difficulties of teaching Maritime English at the Member Schools and provide a basis for improvements in teaching and testing proficiency in Maritime English at IAMU Member Schools.

5.2 Methodological Conclusions and Recommendations

Although there are many applications and considerable research has been undertaken with respect to positioning, there is a lack of research as well as a shortage of applications in measuring maritime education services. More specifically, the minority of positioning studies has concentrated in perceptions in education, as noted earlier.

In addition to the positioning model of this study regarding the current practices in the teaching of Maritime English, further research is, therefore, required particularly for the measurement of the application of a new proposed syllabus and procedure at control group schools. Furthermore, additional research is required to find out the comparison between control group schools and other schools attempting to comply with STCW 95 goals.

Turkey, Gdynia Maritime Academy (GMA) in Poland, Kiev State Maritime Academy (KSMA) in Ukrania, Kobe University of Mercantile Marine (KUMM) in Japan, Liverpool John Moores University (LJMU) in the U.K., Maine Maritime Academy (MMA) in the U.S.A., Mokpo National Maritime University (MNMU) in Korea, Odessa Maritime Training Center (OMTC) in Ukrania, and Rijeka College of Maritime Studies (RCMS) in Croatia, Polytechnical University of Catalonia (PUC) in Spain, National School of Merchant Marine of Marseille (SMMM) in France, The California Maritime Academy (CMA) in the U.S.A.

In addition, great help of Professor Malek Pourzanjani in the collection of data from these IAMU Member Schools and kind contribution of Professors Susan Loomis at Maine Maritime Academy and Thomas Moore also at Maine Maritime Academy, currently on leave at Koc School in Turkey, are also highly appreciated.

Other acknowledgements of the authors are for the MDS(X) Series and computer program originators of the multidimensional scaling technique developers — Professors Carroll and Chang at Bell Laboratories in New Jersey, U.S.A. and Professor Coxon formerly at the University of Edinburgh and currently at the University of Essex in the U.K.

Endnotes
*The Transportation English working group at Maine Maritime Academy has included many professors; currently the group includes: Professors Donna G. Fricke (MMA), Susan K. Loomis (MMA), Thomas Moore (MMA, on leave at Koc School, Turkey), Laurie C. Stone (MMA), and Funda Yercan (Dokuz Eylul University, Turkey on leave at MMA during academic year 2001-02).

References

Chatfield, C. and A. J. Collins. Introduction to Multivariate Analysis. London: Chapman and Hall, 1980.

Coxon, Anthony and MDS(X) Project Team. MDS(X) Series of Multidimensional Scaling Programs. Edinburgh: University of Edinburgh, 1980.

Hair, Joseph F., Rolph E. Anderson, Ronald L. Tatham, and William C. Black. Multivariate Data Analysis. Fifth edition. New Jersey: Prentice Hall International, 1998..

Kiefer, Jennifer Blain. STCW s Link with PTP. Proceedings of the Marine Safety Council 58.4 (2001):30-31.

MARCOM Project: Final Report: The Impact of Multicultural and Multilingual Crews on Maritime Communication. Vols 1 and 2. A Transport RTD Program DG VII.

Moinpour, R., J. M. McCullough, and D. L. MacLachlan. Time Changes in Perception: A Longitudinal Application of Multidimensional Scaling. Journal of Marketing. 13 (1976):245-253.

Prevention Through People [PTP]. Washington: DOT/USCG, 1995.

Sag, Osman Kamil, and Hisashi Yamamoto, eds. International Seminar on Maritime English: Proceedings. Istanbul: ITUMF/JICA, 2002.

Yercan, Funda. A Comparative Analysis of the Turkish and European Union Passenger Ferry Market in the Eastern Mediterranean. Unpublished Doctor of Philosophy Thesis. Plymouth: University of Plymouth, 1997.

Figure 1. Configuration of correlations between the IAMU Member Schools and their characteristics to teach and test proficiency in Maritime English
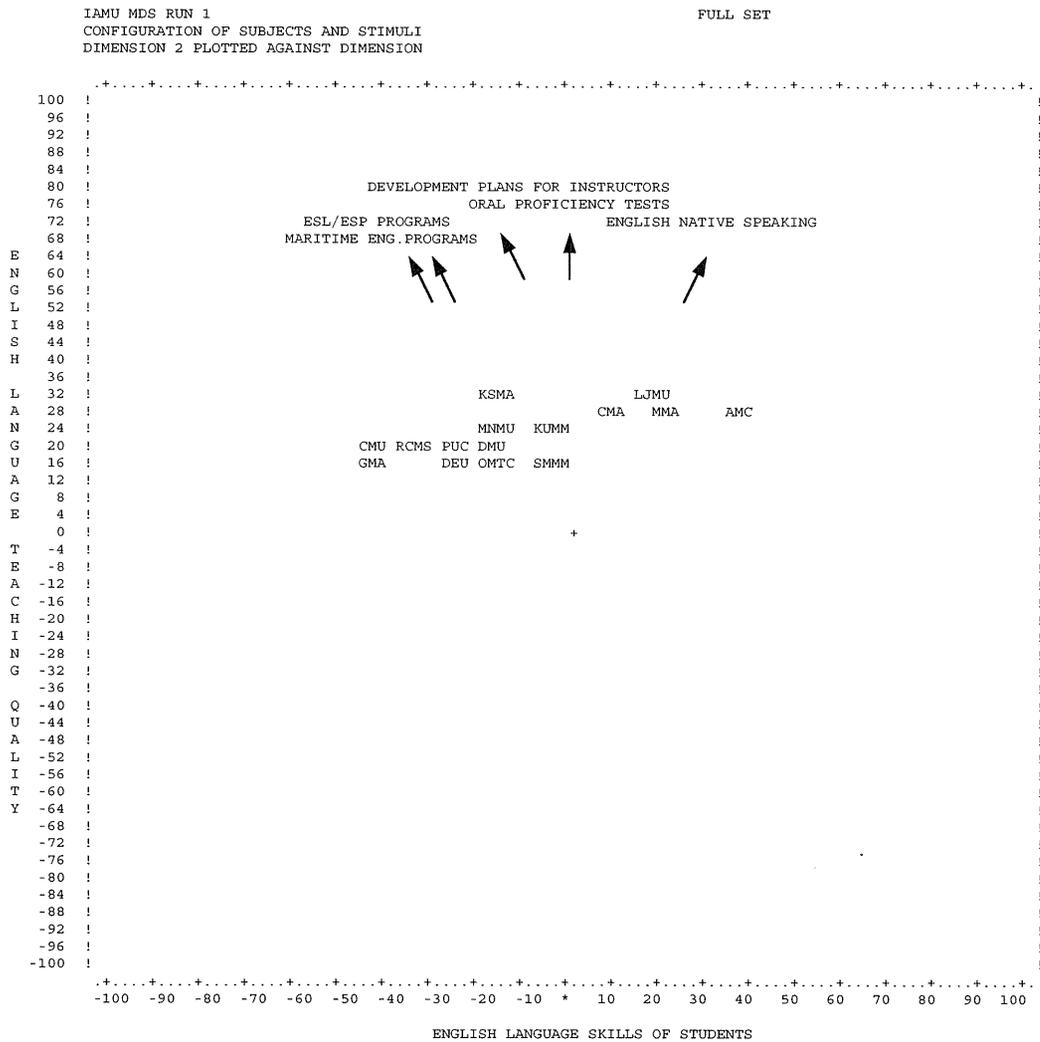
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IAMU MDS RUN 1                                          FULL SET
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     92 !                                                                                                                  !
     88 !                                                                                                                  !
     84 !                                                                                                                  !
     80 !                        DEVELOPMENT PLANS FOR INSTRUCTORS                                                         !
     76 !                            ORAL PROFICIENCY TESTS                                                                !
     72 !            ESL/ESP PROGRAMS                        ENGLISH NATIVE SPEAKING                                       !
     68 !            MARITIME ENG.PROGRAMS                                                                                  !
E   64 !                                                                                                                  !
N   60 !                                                                                                                  !
G   56 !                                                                                                                  !
L   52 !                                                                                                                  !
I   48 !                                                                                                                  !
S   44 !                                                                                                                  !
H   40 !                                                                                                                  !
     36 !                                                                                                                  !
L   32 !                         KSMA              LJMU                                                                   !
A   28 !                                      CMA    MMA       AMC                                                        !
N   24 !                          MNMU   KUMM                                                                             !
G   20 !           CMU RCMS PUC DMU                                                                                       !
U   16 !           GMA       DEU OMTC   SMMM                                                                              !
A   12 !                                                                                                                  !
G    8 !                                                                                                                  !
E    4 !                                                                                                                  !
      0 !                                      +                                                                           !
T   -4 !                                                                                                                  !
E   -8 !                                                                                                                  !
A  -12 !                                                                                                                  !
C  -16 !                                                                                                                  !
H  -20 !                                                                                                                  !
I  -24 !                                                                                                                  !
N  -28 !                                                                                                                  !
G  -32 !                                                                                                                  !
    -36 !                                                                                                                  !
Q  -40 !                                                                                                                  !
U  -44 !                                                                                                                  !
A  -48 !                                                                                                                  !
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I  -56 !                                                                                                                  !
T  -60 !                                                                                                                  !
Y  -64 !                                                                                                                  !
    -68 !                                                                                                                  !
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        -100  -90  -80  -70  -60  -50  -40  -30  -20  -10   *   10   20   30   40   50   60   70   80   90  100

                                ENGLISH LANGUAGE SKILLS OF STUDENTS
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AMC-Australian Maritime College, Australia
CMU-Constanza Maritime University, Romania
DMU-Dalian Maritime University, China
DEU-Dokuz Eylul University School of Maritime Business and Management, Turkey
PUC-Polytechnical University of Catalonia, Spain
GMA-Gdynia Maritime Academy, Poland
KSMA-Kiev State Maritime Academy, Ukrania
KUMM-Kobe University of Mercantile Marine, Japan
LJMU-Liverpool John Moores University, U.K.
MMA-Maine Maritime Academy, U.S.A.
MNMU-Mokpo National Maritime University, Korea
SMMM-National School of Merchant Marine of Marseille, France
OMTC-Odessa Maritime Training Center, Ukrania
RCMS-Rijeka College of Maritime Studies, Croatia
CMA-The California Maritime Academy, U.S.A.

Please answer the questions for the situation at your institution, limiting your attention to officer training programs in deck, engine, or deck/engine combined.

1. Please provide basic information about your institution, including basic entry requirements and a website URL. (Include a catalog in English, if available.)

2. Describe the demographic type of your students.

    a. Percentage of mother tongue of students: ___%_____(mother tongue); ___%_____(mother tongue)

    b. Age range of students: between 18-25:_____;   between 25-30:_____; older than 30:_____

    c. On average, previous training in the English language: yes   no

    d. Previous sea going experience: percentage _____

3. Do you agree that English is the language of the sea? If so, please answer the following questions.

4. Do you have a separate teaching program for English as a Second Language (ESL) and/or English for Special Purposes (ESP)? If so, please answer Question #5.

5. Describe your current program for teaching English as a Second Language (ESL).

    a. When did this program begin?

    b. How many full-time instructors of English teach in this program?

    c. How many students are in this program?

    d. How many average years of English language experience have students before entering this program?

6. Do you have a separate Maritime English teaching program? If so, please answer Question #7.

7. Describe your current program for teaching Maritime English.

    a. When did this program begin?

    b. How many full-time instructors of English teach in this program?

    c. How many students are in this program?

    d. On average, how many average years of English language experience do students have before entering this program?

        0-2 years   2-4 years   over 4 years

**Maritime English Project Questionnaire
For Administrators at IAMU Member Institutions**

Please fill in the appropriate box for the level at your institution. Support could be received from designated instructors.

1: Very poor 2: Poor 3: Fair 4: Good 5: Very good n/a: Not applicable

	1	2	3	4	5	n/a
Regarding Students						
1. Availability of teaching materials/equipment used to improve listening, speaking, reading and writing skills of students at your institution						
2. Availability of native English speakers to help students practice maritime English						
3. Oral proficiencies of students are tested in simulated maritime situations						
4. Availability of courses at our institution for students to practice maritime English						
5. Availability of technical manuals of maritime related equipment written in English						
6. Review of technical manuals of maritime related equipment in English						
7. Total period of time for learning maritime English at our institution						
Regarding Instructors						
8. Availability of English native speaking teachers at our institution						
9. Proficiency level of maritime English among the instructors of maritime related courses (i.e. navigation)						
10. Proficiency level of maritime English for instructors teaching Maritime English						
11. Availability of plans for the improvement of the English language of instructors in maritime related courses						
12. Instructors of maritime related courses at our institution benefit from faculty development plans						

Maritime English Project Questionnaire
For Teachers of TOEFL or ESP at IAMU Member Institutions

Please fill in the appropriate box for the level at your institution.

1: Very poor   **2**: Poor   **3**: Fair   **4**: Good   **5**: Very good   **n/a**: Not applicable

A. In general:

	1	2	3	4	5	n/a
1. Total time spent for teaching the English language at our institution						
2. Testing of student English language proficiency						
3. Level of standardized international exam for measuring English language proficiency of students						
4. Participation of students in class discussions using English language						
5. Availability of courses at our institution for students to practice English						
6. Availability of native English speakers at our institution to help students practice English						
7. Availability of instructors who hold a certificate in the teaching of English as a Second Language (ESL) or English for Special Purposes (ESP)						
8. Required (English language) proficiency level sufficient for instructors teaching English						
9. Availability of plans for the improvement of the English language of instructors						
10. Instructors teaching English at our institution benefit from special development plans						

B. Listening / Speaking / Reading / Writing skills:

	1	2	3	4	5	n/a
Listening						
1. Availability of techniques used to improve the listening skills of students						
2. Availability of films and videos in English for students to practice listening skills						
3. Availability of techniques used to develop and improve the listening skills of students in order to prevent them from translating into their own language						
4. Availability of techniques used to develop and improve the ability of students to think in the English language						
Speaking						
5. Participation of students in class discussions using maritime English						
6. Students can practice speaking English with native speakers at our institution						
7. Oral proficiencies of students are tested in simulated maritime situations						
Reading						
8. The level of phonics instructions						
9. Availability of special reading courses in English for students						
Writing						
10. Availability of English writing course						
11. The level of English writing skills of students is checked regularly						