

# COMMUNICATION AND PRACTICAL TRAINING APPLIED IN NAUTICAL STUDIES

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## ABSTRACT

Communicative language training set in the context of real-life situations at sea has hardly been part of any curriculum for training merchant navy officers. It is found that English language skills of the ships' crew is at a very low level, resulting in ineffective communication and it has also been identified that ineffective communication is the major cause of the many accidents. This fact along with the cultural diversities of multi-national ship crews creates a major current problem.

The CAPTAINS project (EU Leonardo Captains Project, 2010-2012) intends to create a knowledge base of real-life scenarios on linguistic and cultural diversities with respect to effective communication in English among seafarers on ships and ashore. The CAPTAINS project (ibid) will develop a software based maritime English tool in which the scenarios developed will optimally drive the definition of proper learning approaches, virtual collaboration and learning spaces as a medium of novel learning platforms deploying 2D/3D simulations. This will be incorporated with educational content and be bundled as online learning through an advanced e-learning platform. The knowledge base of real scenarios is intended to be included in the curriculum of Maritime English in maritime education and training institutions. Industrial and vocational training would benefit from the existence of a software training tool for its sea-going and port personnel which focuses on effective English language communication, as an essential ingredient in safe and efficient ship operations.

This paper also includes the needs analysis element of this project, in which many seafarers and maritime English teachers were consulted. The methodology followed for this needs analysis involved the creation of a cadet level questionnaire, which was piloted on the cadets at TUDEV Institute. This was followed by the development of two 'main' questionnaires, (one for seafarers, and one for maritime English teachers) which were made available online through the project website, and promoted widely throughout the partnership's network of

contacts. These questionnaires remain online for additional data collection for future use. Following the elaboration of the questionnaire results, workshops and round table discussions took place in order to gather the opinions of the target groups. The following is an account of the results of the surveys for maritime English teachers and seafarers, and a summary of the workshop reports.

Keywords: *Maritime English, communication, maritime education and training*

## **1. INTRODUCTION**

English has been set as the language of the sea at an international level and it is used in all situations such as ship-to-ship, ship-to-shore and between maritime personals; however it is not always non-problematic since nowadays ship crews are multi-national instead of being from a single nation. Linguistic, paralinguistic and cultural and discourse formation issues act as a barrier to the safety of the ships at sea (Ziarati, 2006). A careful study identified that 80% of maritime accidents are down to human factors (Verbek, 2011), of which failure of communication represents one third (Ziarati, 2006, Trekner, 2007). The IMO has also underlined the importance of effective communication in an International Seminar as a crucial issue for Marine Safety (Winbow, 2002). Therefore, it is very necessary to remedy those accidents caused by human factors contributed by communication failures. The problem is not only in the partner countries but worldwide (Loginovsky, 2002).

The CAPTAINS project (ibid) can help reduce the communication failures, once it sets and develops standards on scenarios based learning approaches and respective courses on communicative English learning. Already, it has prepared a knowledge base of scenarios simulating real-life situations of effective communication that includes sets of real accidents, incidents and near misses that will then be incorporated in the existing MET programmes in the partner countries, Europe and later-on world-wide.

The CAPTAINS project (ibid) intends to develop an environment for learning English by means of 2D/3D simulations and is expected to reduce communication related issues at sea. This will be purely scenario based extracted from the past accidents, incidents and near misses which will enable to demonstrate the wrong and right ways to communicate and potential critical situations may lead to and train those maritime personnel on what action to take to avoid them.

While developing the course, the standards will transfer innovation from existing English model courses such as the International Maritime Organisation's (IMO) Model course 3.17 and the IMO's Standard Maritime Communication Phrases (SMCP).

This paper is structured as follows: where section one has provided a brief introduction to the rationale, aims and objectives of the CAPTAINS project (ibid). The next part (section two) includes the analyses of the questionnaire, which was handed out to lecturers, professors, and seafarers whom have sea experience. In section three, the results of the workshops that were carried in the partner countries to support the outcome of the questionnaires will be provided. Finally, section five presents the conclusions of the paper.

## **2. ANALYSED RESULT OF THE QUESTIONNAIRE**

### **2.1 DEMOGRAPHIC**

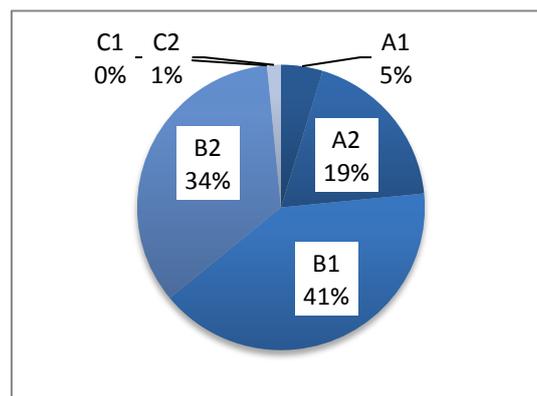
A total 109 seafarers from 12 different countries completed the questionnaire for seafarers. Over two thirds of participants were under the age of 35. Over half had more than 6 months of sea service, with almost a quarter having between 5 and 10 years at sea. The majority had served on bulk carriers, and tankers. There were responses from 25 senior officers, 18 officers, 65 officer cadets, and 1 rating.

The questionnaire for maritime English teachers was completed by 64 lecturers and professors from over 30 maritime academies and universities worldwide. 39% of responses came from participants who had prior seafaring experience. Around half of the participants told us that they prepare their students for formal English language exams or tests of maritime English.

## 2.2. PROFICIENCY LEVELS

Maritime English teachers told us that 41% of their current students were at B1 level, and 34% were at B2. 75% of the students covered by the survey were at either B1/B2 level (intermediate) with their English. This is a significant finding, as it clearly indicates where learning tools and maritime English tests should aim in order to make a significant impact and address user needs. 24% were at A1/A2 level (beginner), and only 1% was at C1. We asked them what English proficiency level they think is required for certain jobs on board. The most frequent answers for these categories were:

- Ratings: B1
- Cadets: B1/B2
- Deck Officer: B2
- Engineer: B2
- Pilot: C1
- Chief Engineer: C1
- Master: C2

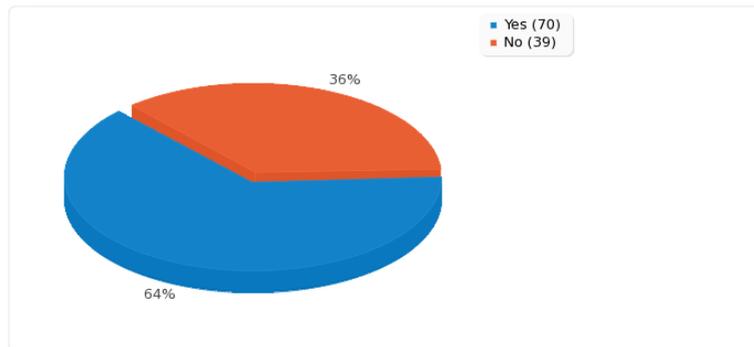


**Figure 1:** Language level survey participants' current students

While the average cadet graduating from maritime academy, and passing an appropriate test of maritime English, will be sufficiently competent in English to fulfil the role of a deck officer or engineer, those intending to progress to a senior position should, (in the eyes of the maritime English teachers surveyed) advance their level of English.

### 2.3. ENGLISH LANGUAGE TRAINING

Approximately one third of the seafarers possessed a formal English language qualification, such as IELTS, FCE, or TOEIC. The seafarers told us that of the four language skills (reading, writing, listening, and speaking) they were, in general, stronger in reading than in the other skills in English (question 10). 59% of the seafarers had received more than four years of general English instruction, but half that number had received the same amount of maritime English instruction. Only a very small minority (less than 5%) said they had received no English instruction at all.

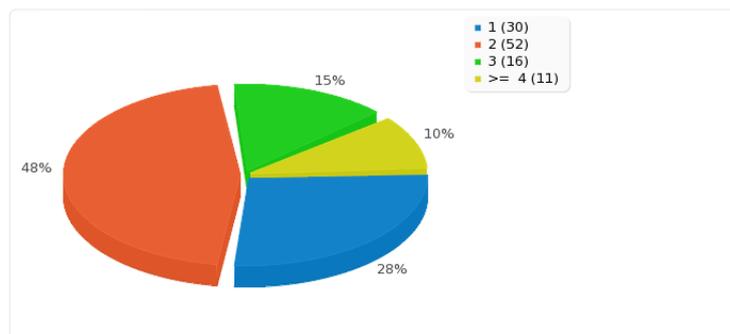


**Figure 2:** Questionnaire for seafarers: were you ever taught any nautical subject matter with English as the language of instruction?

Most of the survey participants were taught nautical subject matter with English as their language of instruction. This method appears to be very successful (only 5% of participants said that it wasn't) and is used at several institutions within the CAPTAINS partnership. The main benefit of this method is that cadets learn nautical terminology in context.

### 2.4 ON BOARD COMMUNICATION

72% percent of the seafarers said that more than one language was spoken on board during their current or most recent service on board. Most participants agreed that communicating in one language in emergency situations was very much affected by this fact. One participant stated that there were times when, because of his interlocutor's pronunciation, he had to leave his station in the cargo control room and go to the deck to speak to the person face to face and 'watch his hand movements' in an attempt to communicate.



**Figure 3:** How many languages were spoken on board during your current or most recent service?

Most the seafarers said that they often use English to communicate with their fellow crew members, in particular when speaking with the ratings (45% said they use English 'all the time' when speaking with ratings).

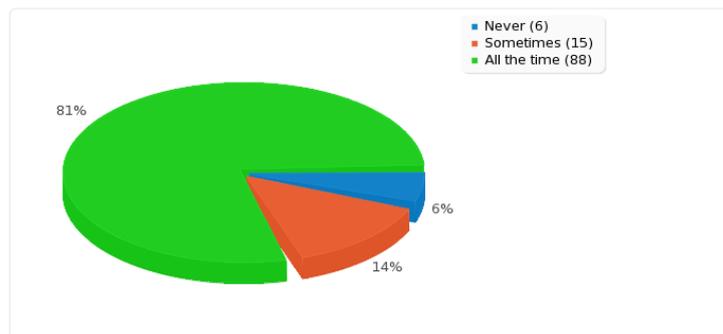
## 2.5 CULTURAL DIFFERENCES ON BOARD THE VESSELS

Nearly three quarters of the seafarers agreed that cultural differences have an affect on the level of communication on board. One participant stated that ‘crew members of different nationalities react and report differently’ when faced with emergencies. Paralinguistic elements such as hand gestures and silence have varying significance across cultures.

Another salient point, which was echoed in the open responses, was the idea that people can say that they have understood something, but in actually, they have not. This clearly underlines the need for communication to be made using standard vocabulary, and for seafarers to be able to give the correct feedback (as documented in SMCP) to confirm that they have understood an order. Another participant stated that some native speakers of English sometimes do not use SMCP all the time, and variations in their use of grammar can be confusing (for example, many native speakers of English use double negative forms when speaking). The issue of people from different cultures using different hand gestures was raised.

## 2.6 EXTERNAL COMMUNICATION

When asked how often they use English for VHF communications in international waters (Q17.4), 81% answered ‘all the time’. 28% of the seafarers thought that it was ‘very difficult’ to understand incoming messages from non-native speakers of English. The issue of pronunciation was the most common reason for not understanding in incoming message.



**Figure 4:** How often do you use English when speaking with Ship-to-ship/Ship-to-shore in international waters?

The seafarers were asked to rank the importance of using English in several situations on board. In general, questionnaire the seafarers ranked VHF communications (ship the ship / ship to shore) and ‘emergencies on board’ slightly higher than the other choices provided. Other suggestions provided by participant included ‘communication with pilots’, and ‘communication with port workers’. This is an interesting point, as ships in entering ports in foreign countries will often encounter pilots and port officials who speak a different language to those on board. This point is reinforced by the answers to the question: ‘which activities require you to speak in English?’ The four that were marked ‘most important’ were:

- 1) *Communications with pilots*
- 2) *Communications with coastguards*
- 3) *VHF communication (ship / ship, ship / shore)*

#### *4) Communication with cargo handlers*

Seafarers were asked what they found most difficult about communicating their message in English using the VHF. The most popular answer (after noisy / distorted transmission) was related to accent and pronunciation. Similarly, when asked what they found most difficult about comprehending a VHF message, the most common answer was: 'because the sender does not pronounce words like you do'. This shows that even when using SMCP, the issue of pronunciation is still present.

### **2.7 TEACHING CONTEXTS**

The two most popular methods of teaching provided by the maritime English teachers are 'communicative approach' style lessons, and lectures with audio recordings, pictures and videos. They said that they seldom use distance learning, and online learning methods using 2D and 3D animations. When asked to rate certain types of activities as to how appropriate they would be in the proposed new e-learning software, the maritime English teachers almost unanimously marked 'simulations and games' and 'interactive activities' as being appropriate. They mostly also marked '2D / 3D animations' and 'self learning CDs' as being extremely useful. This shows that there is demand, and room for, a solution to provide these things.

Maritime English teachers told us that they would very much like to see contexts relating to 'safety and security' and 'emergencies on board' in the new e-learning software. Other contexts such as VHF communications and anchoring / mooring operations were also popular, although one participant suggested that the e-learning software might contain a section relating to the engine room department.

Seafarers told us that they thought practical training on board was the most appropriate way to learn maritime English, followed by conventional classroom lessons. Following these two essential elements were interactive scenario based applications and self learning. These categories were broken down into the four skills. Participants told us that these methods are a good way for them to practise their reading and listening skills.

### **2.8 PREVENTING FUTURE ACCIDENTS**

The group of seafarers were asked if they had been on a ship which was involved in an accident or near miss due to a communication failure. 74 answered 'no', 32 had been involved in a 'near miss', and 8 had been involved in accidents.

The most communication failures were during 'ship to ship' and 'ship to shore' communication. Many accidents also fitted into the category of cargo handling failures. The nature of the communication failures was fairly evenly spread between vocabulary, grammar, pronunciation, fluency, and the use of SMCP.

Both groups of participants were asked which language functions would contribute to a reduction in the number of future accidents. These were classified into four main groups: speaking, listening, reading, and writing. The most popular two choices for each group are as follows:

	<b>ME Teachers</b>	<b>Seafarers</b>
<b>Speaking</b>	<ul style="list-style-type: none"> <li>• Describe / locate safety equipment</li> <li>• Interacting with the pilot</li> </ul>	<ul style="list-style-type: none"> <li>• Giving orders</li> <li>• Answering questions for clarification</li> </ul>
<b>Listening</b>	<ul style="list-style-type: none"> <li>• VHF exchange procedures</li> <li>• Obtain VTS (vessel traffic service) data or any other external source data</li> </ul>	<ul style="list-style-type: none"> <li>• VHF exchange procedures</li> <li>• Receiving orders</li> </ul>
<b>Reading</b>	<ul style="list-style-type: none"> <li>• Consulting operation manuals and ship's documentation</li> <li>• Vocabulary acquisition: SMCP for VHF communications</li> </ul>	<ul style="list-style-type: none"> <li>• Consulting operation manuals and ship's documentation</li> <li>• Vocabulary acquisition: SMCP for VHF communications</li> </ul>
<b>Writing</b>	<ul style="list-style-type: none"> <li>• Making entries in the log book</li> <li>• Writing a damage report</li> </ul>	<ul style="list-style-type: none"> <li>• Making entries in the log book</li> <li>• Writing a damage report</li> </ul>

**Table 1** – Suggested training methods in teaching/learning Maritime English

The results were comparable. Both groups more or less agreed on the choices provided in the questionnaire for most categories as a means of preventing future accidents.

Survey participants considered speaking and listening skills to be more important in preventing future accidents than reading and writing skills. This was the expected response, as most communication at sea is made by speaking and listening, especially in critical situations, which are immediate.

### **3. SUMMARY OF WORKSHOPS**

#### **3.1 ABOUT THE WORKSHOPS**

Workshops were organised by the University of the Aegean, the University of Cadiz, TUDEV Institute of Maritime Studies, 1<sup>st</sup> Evening Vocational Senior School (Athens), and Centre for Factories of the Future (UK). There were a total of five workshops, four of which were held in person, and one final international workshop, which was hosted online, via Skype video conference.

The workshops were attended by people from the following groups: Maritime English teachers, maritime lecturers, English teachers, cadets, managers and representatives of shipping unions, supervisors of VET, directors of maritime academies, academics, master mariners and other seafarers (such as officers, engineers, and ratings), VTS operators, and specialists in applied linguistics.

The workshops varied slightly in style, but in general, all workshops used the questionnaire and accompanying results as input for the discussions. Additional key knowledge was gained by consulting the target groups and stakeholders, who were also asked for their opinions on the shape that the proposed e-learning software should take.

### **3.2 CONTENT OF THE SOFTWARE: LEVEL**

Positioning the software at the appropriate level is an important consideration. The TUDEV cadet questionnaire showed that the cadets mostly considered themselves to be of intermediate (or ‘competent’) ability. The results of the main questionnaire showed that most of the cadets at the academies of the maritime English teachers questioned were also at intermediate level (75% B1 and B2), with a few A2 level, and hardly any at the upper or lower thresholds. The Greek workshop discussed the issue of levels, and produced conclusion that B2 would be a suitable level for ordinary seamen, and C1/C2 would be appropriate for officers. This was supported by the Turkish workshop, which found that ratings should speak at A2 level, cadets at B1, officers at B2, masters at B2-C1, and pilots at B1-C1. The Skype workshop participants reported that most of their cadets were at around B1 level, and it was suggested that cadets would be the most likely users of this software, at least initially. It was agreed by all at the Skype workshop that beginner level learners (A1) do not have enough knowledge of English to be able to command maritime English, as technical vocabulary is often best learned through Content Language Integrated Learning, as mentioned in the Spanish workshop report. The workshops in Turkey and Greece both noted that the English language level among Ratings is very low.

### **3.3 CONTENT OF THE SOFTWARE: AREAS TO INCLUDE**

The discussions in the workshops mostly focussed on active skills. VHF communication was a topic discussed in many of the workshops. The Turkish workshop emphasised the point that most accidents are caused by problems with external communication, such as collision, as pointed out in the Spanish workshop. In the Spanish workshop, it was noted that VHF communication by VTS operators was required to be fluent and masterful in its use of SMCP.

The Greek workshop reported that VHF operators try to guess the nationality of the person who is trying to communicate with them from their accent. All workshops reiterated the need for the issue of pronunciation to be dealt with, and this reflected the results of the questionnaire, which highlighted the fact that most of our survey participants felt that pronunciation was a major factor in whether or not they were understood. The issue of seafarers providing feedback was mentioned as an important issue in the Greek workshop. According to regulation, seafarers must repeat an order that they have been given to confirm that they have received it. The Turkish and Spanish workshops put forward the suggestion that through Content Language Integrated Learning was an effective way for people to learn maritime English.

### **3.4 CONTENT OF THE SOFTWARE: PRACTICAL CONTENT**

The type of learning activities to be presented generated much discussion. A member of the Greek workshop ‘underscored the necessity of practical content’. This was echoed in the other workshops, including the Turkish one, which stated that a good first step towards communication on board was the ability to read instruments. The Spanish workshop report pointed out that ratings often used maritime English in relation to their tasks. Many of the

seafarers who completed that questionnaire stated that their best learning experiences in maritime English were on board. There is a compelling need for vocation specific English language training material. The Spanish workshop report pointed out that ‘it was significant to see that the audience would agree on practical training on board as being the most accurate and efficient learning method’.

### **3.5 IT CONSIDERATIONS**

The subject of the physical limitations of the software was brought up at the Turkish, Greek, and Skype workshops. It was noted that the software could not be interactive unless it was online, but could not be taken to sea unless it was stand-alone. ‘Individual learning via the internet will not work for seafarers on board’, states the Greek workshop report. The issue of seafarers being fatigued from working hard and not having time for study was mentioned. The suggestion from the Turkish workshop was to reduce the amount of time needed for the software to connect to the internet (in order for it to update) so that a synthesis of benefits could be achieved.

## **4. CONCLUSIONS AND DISCUSSIONS**

The CAPTAINS projects’ intention is to develop a scenario based training programme using 2D/3D simulations which aims to reduce the problems associated with the use of communicative maritime English at sea. The other focus point of the CAPTAINS project (ibid) is to train maritime personnel purely from the past accidents, incidents and near misses that are directly related to communications such as ship-to-ship, ship-to-shore and between maritime personals. Through this study, the human factors leading to ineffective communication in maritime English have been identified and suggestions from lecturers, professors and seafarers have been noted through the questionnaires and workshops. Similarly, the most frequent occurring accidents related to communicative failures have been found.

One of the results of the questionnaires in the eyes of the maritime English teachers is that the average cadets graduating from a maritime academy, and passing an appropriate test of maritime English is competent to carry out the duties of Deck and Engineer officer. However, those intending to progress to a senior position should advance their level of English.

The other issue identified within this questionnaire is that seafarers in general, do better in reading rather than writing, speaking and listening. Therefore, the CAPTAINS project (ibid) will focus on creating scenarios to develop those skills that need improvement.

There is a remarkable conclusion from the questionnaire that internal and external communications are not very clear, which usually leads to issues becoming time consuming, especially when responding to emergencies and performing the daily operations of the ship.

It is also validated within the questionnaires that “crew members of different nationalities react and report differently” when faced with emergencies. It seems apparent that when panic sets in, the problems are exacerbated with their lack of maritime English. This can be seen as one of the reasons why one third of the accidents are due to communication failures. Also, it should be stated that the improper use of Standard Maritime Communication Phrases (SMCP) as well as the improper use of grammar plays a part too.

Most importantly, the questionnaire had identified the most useful and effective scenarios that lecturers, professors and seafarers think will be useful. Those inputs will help to create a useful and interactive training platform for maritime personals.

From the result of the workshops, it is clear that the stakeholders would like to see maritime English training software that is directly related to the real life tasks associated with working on board ships. According to the Greek workshop report, there is much need for VHF communications training, including the use of accents. This was echoed in other workshops, and also in the questionnaire results.

It is hoped that the CAPTAINS Project can improve communications at sea and help to improve the maritime English of seafarers.

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