

## Comparative Analysis between Real Life and Simulator-Based VHF Communication for ESL Cadets

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**Abstract** The quality of external and internal communication is a crucial issue in maritime safety. Voice communication through VHF is a significant activity contributing to safety and efficiency. Miscommunication can result in hazardous situations. Clear communication boosts situational awareness and contributes directly to safety at sea.

Research among freshman and senior students was performed regarding their first real life and simulator-based VHF communication experiences. The results were compared in order to improve VHF communication training in English among cadets and to make recommendations to help other professors in the field guide students using English as a second language (ESL) in order to reduce anxiety when using communication devices.

Fear, anxiety, and hesitation are the most common feelings that cadets have “before” their real first VHF communication experience. They mentioned the importance of encouragement by their training officers during that phase. “During” their real VHF communication experiences, they most often reported feelings of excitement and fluctuations in confidence. Support from the training officers was important to them. “After” the real VHF experience, students reported feelings of success and confidence.

Freshmen students mentioned that they were excited and afraid of making mistakes before and during their first VHF communication practice on the navigation simulator. After, they concluded that the VHF communication practice was very good and useful; and provided an opportunity for experience in maritime English which increased their confidence before on-board training.

**Keyword:** *VHF Communication, Simulator, ESL, Communication Apprehension*

### 1. Introduction

The quality of external and internal communication is one of the most important issues in maritime safety. Both lack of communication and miscommunication can result in hazardous situations. Communication also boosts situational awareness which clearly contributes to safety during navigation. Voice-communication through VHF is one significant activity contributing to the safety and efficiency of maritime operations.

#### 1.1 Human Communication Problems

As emphasized by Yercan et al [1], there is a shift in accident analysis from the mechanical to the human factor; and the significance of “human error” is increasing [2]. Pyne and Koester [3] defined the ingredients in the socio-technical system of the maritime domain as: humans (individual crew members), groups (the crew), technology (ship, instruments, equipment,

tools, etc), work practice (procedures, conventions, traditions), organization (management, company culture, pressures, etc) and work environment (light, noise, vibration, etc). Pyne and Koester [3] categorized accidents with respect to human error: 1) Problems related to multi-cultural crews (e.g. the *Bunga Teretai Satu* accident, the death of a crew member on board *Sally Maersk*, and the *Scandinavian Star* accident), 2) Problems related to different cultures / languages among crew and pilot (e.g. the *Bright Field* accident), 3) Problems related to different cultures / languages among crew and passengers on passenger vessels (e.g. the *Skagerak* accident and *Scandinavian Star* accident), 4) Problems related to different cultures /languages with respect to external communication, VHF communication with other vessels (e.g. the *Royal Majesty* accident).

As Loginovsky [4] put it, English became the means for communication at sea which is why the overall performance of the international shipping industry, safety at sea and protection of the environment in many respects depend on a high level of command of the language. Due to the international character of maritime commerce, people from very different nationalities, languages and cultures work in a complex setting, therefore a common language must be used for communication between multinational and multilingual crews. In most cases, English is the preferred language for oral communication as determined by the Safety of Life at Sea (SOLAS) Convention, International Maritime Organization, in 1960.

Portela, et al. [5] categorized communication problems as such:

- The crew members' linguistic incompetence, as a result of low level of English
- Differences in the level of knowledge of English among the crew members
- Difficulty to assimilating different accents and understanding new and particular forms of English.
- Environmental difficulties inherent to this sector, such as voice distortions via VHF, or high noise level that hinders communication in the engine room.

According to Reason [6], communication problems fall into three categories:

- 1- System failures in which the necessary channels of communication do not exist , or are not functioning , or are not regularly used
- 2- Message failures in which the channels exist but the necessary information is not transmitted
- 3- Reception failures in which the channels exist, the right message is sent, but is either misinterpreted by the recipient or arrives too late.

Portela [7] tried to find a relation between communication problems and accidents. Her research showed that communication problems related to language are the cause of 20% of accidents. The maritime field is heavily reliant on constant and exact communication as well as understanding of mathematical formulas and their application to the field. Poor communication between crew members from the same culture can be a threat to the safety of a vessel. Furthermore, if crews use English as a second language (a basic factor in communication errors), the threat to maritime safety increases [8]. As Loginovsky [4] explained, the crew of a vessel should carry out precisely all the functional duties which in many respects depend not only on knowledge and skills in disciplines such as navigation or engineering, but also on the ability to apply English correctly and competently.

As Trenkner [9] reported, the basic communication skills, (i.e. listening and speaking, reading and writing, listening and then speaking) are the most complicated ones. Furthermore, listening and speaking amount to more than 85% of the total communication requirements a

deck officer has to cope with in his or her services. Despite technological advances in means and procedures to facilitate the exchange of information between ships and shore services, such advances cannot have the desired positive effect if attention is not paid to the development of crew members' linguistics skills. Clearly, "linguistically under-qualified officers, either on deck or in the engine room, create a danger to the ships, crews and passengers, to other vessels and to the marine environment" [10].

Students are also expected to be proficient in English since technical jargon is mainly in English, and because of the high probability of working in a multicultural environment. Cwilewicz and Pudlowski's [11] work on didactic programs for a maritime academy in Poland state exactly this view: to ensure safety of passengers and colleagues, maritime students must also learn effective communication skills. Preparing students for the technical jargon often used by native English-speaking mariners and teaching students when and how to ask questions to clarify the jargon should be among integral pedagogical goals for maritime educators worldwide.

Portela, et al [5] emphasized that the most problematic communications are those that take place from the internal to the external: ship-to-ship and ship-to-shore; and a vague, general knowledge English is considered to be the most problematic area in external communications. This occurs most frequently because of differences in pronunciation and accent. Mariners who speak English as a second language (ESL) often have knowledge of a standardized vocabulary and pronunciation which then impedes fluent communication because those mariners cannot fully comprehend the poly-pronunciations and accents of English.

Loginovsky [4] mentioned two problems during communication:

- 1) Professional incompetence of the student and the teacher in navigation. The closer the social and professional experience, the more easily people understand each other.
- 2) Communication failure may arise as a result of differences in social experiences of interlocutors.
- 3) Communication failure may be due to the big difference in levels of English, which is why standardization is necessary.

Metze and Nystrup [12] defined four dimensions of verbal communication in a professional context. Any communication sequence (conversation, statement, order, question, answer, etc.) can be analyzed according to these four dimensions:

- 1- Cognitive (knowledge and sense, exchange of exact information) – affective (feelings and intuition)
- 2- Expanding (long conversation or dialogue, questions which lead to comprehensive answers) – limiting (closing the conversation as quickly as possible, short answers, yes/no)
- 3- Confronting (focus on problems and conflicts) – concealing (hiding problems and conflicts)
- 4- Listening (paying attention to what is said and showing that by gestures and answers)- not listening (not paying attention, indifferent, no eye contact)

Pyne and Koester [3] emphasized that the need for clear verbal communication between parties in the commercial marine environment is multi-faceted as the ship is the working environment, learning environment and social environment for its personnel. The multinational crew must interact and communicate in a common language to maintain "social harmony" in an off duty context and in their everyday "teamwork" to ensure effective day-to-

day operations. The most commonly recognized failures occur in understanding English between ship-to-ship and/or ship-to-shore communications under conditions of restricted maneuverability, or when under critically congested circumstances where little time or space can be afforded for mistakes.

### ***1.2 Communication Apprehension***

One of the issues often raised in public speaking is “communication apprehension” or CA which is essentially defined as “an anxiety syndrome associated with either real or anticipated communication with another person or persons” [13]. Miscommunication due to cultural differences and the perceived lack of proficiency in the English language of these maritime students is identified as a source of concern in the language classroom [14]. As McCroskey and Richmond [15] emphasized, people tend to avoid communication in ethnically/culturally divergent groups.

There are 4 major types of CA[15]:

- 1- CA as a trait: trait, or personality-type, CA is an individual’s general orientation toward communication regardless of the context or situation.
- 2- CA in a generalized situation: This type of CA is related to generalized types of communication situations.
- 3- CA with a given individual or group across situations: Almost 95 percent of the population report having CA about communicating with some person or group in their lives. The target producing this CA may be the boss, dad, teacher, a peer or virtually anyone else in the person’s environment. This type of CA is person (or group) specific. Another person or group in the same context would not experience the CA.
- 4- CA with a given individual or group in a given situation. Virtually all of us experience CA from time to time with some person or group in some situation.

Jung and Croskey [16] underscored that second language situations could create and amplify CA. Neuliep and McCroskey [17] also defined intercultural communication apprehension as “fear or anxiety associated with either real or anticipated interaction with people from different groups, especially different cultural or ethnic groups.” They also emphasized that intercultural communication apprehension is a context of communication marked with unusually high uncertainty. Such uncertainty leads to anxiety, a causal ingredient in communication apprehension.

Klopf [18] studied communication apprehension in seven different cultures and found different levels of CA across cultures. These differences are even found within geographically very close or in presumably very similar countries. For instance, substantial differences were revealed between geographically close Korea and Japan. According to research, the Japanese have the highest CA and Koreans have the lowest CA between the two nationalities.

Jung and McCroskey [16] concluded that the first language CA is the basis for the second language CA. In other words, first language CA determines the level of second language CA.

## **2. Methodolgy**

Qualitative research among freshman and senior students at Dokuz Eylul University Maritime Faculty Marine Transportation Engineering Department was performed regarding their first real life and simulator-based VHF communication experiences. A total of 25 essays from

senior students and 48 essays from freshmen were collected. The essays were analyzed at three phases: before, during and after the communication.

### ***2.1 First Simulator-based VHF communication practice experiences of freshmen students.***

Research among freshmen students who do not have any onboard experience was performed regarding their first simulator-based VHF communication practice experiences in English. Freshmen class students were asked to write in a short essay the feelings and thoughts that they had during that practice. The classroom has a total of 56 students and a total of 48 short essays were collected.

Some extracts from freshmen student essays:

... As I do not have very much English practice, I feel myself under stress [during practice]. But I feel the responsibility... (Freshman student no 43)

...it was a very good feeling. As my English is not enough I'm afraid a little bit ... (Freshman student no 38)

... I think this is a good experience. Before this practice I had some doubt about ship reporting with VHF but now I have got self confidence about ship reporting...(Freshman student no 34)

...I was very excited when I first entered the bridge [mock up]... As the communication language is in English through VHF this made me afraid... (Freshman student no 31)

...With this practice we gained experience for real life, English speaking and improve self confidence... (Freshman student no 16 ).

### ***2.2 First real life VHF Communication Experiences of senior students.***

Research among senior students was performed regarding their first real life VHF communication experiences during their seagoing training phase. Senior class students were asked to write an essay about their feelings and thoughts during their first real life VHF communication experiences. The classroom has a total of 59 students and a total of 25 essays were collected

Some extracts from student essays:

... amongst all of the intricacies of working on a ship, one of the most difficult thing to learn is how to communicate using the VHF technology. During one's first time aboard a ship, it can be very difficult to figure out how to perform necessary tasks. My first time was no exception. When the master commanded me to answer the coming call on VHF, I was very excited but scared at the same time. In fact, I was so excited that when I answered the call, I could not remember what to say. It was not until the second officer in command helped me that I was able to answer properly. I felt very disappointment in myself because I let my excitement get the best of me and momentarily forgot what I had previously learned about using the VHF system.....although it was difficult, with the help from officers and through sheer repetition, I was able to become more and more comfortable using the VHF system to communicate... (senior student no.24)

...when I spoke with the VHF for the first time I was in Tunisia at anchor. My vessel was waiting instruction for the port entrance. While I was on the bridge for anchor watch, port control called the ship for giving port entrance information and the time of pilot on board. At

the beginning I was so excited. My voice trilled and I was afraid of making mistake. But then I relieved and I got back my self-confidence. I spoke with port control fluently and I did not make any mistake ... (Senior student no.20)

...chief mate encouraged me to call the vessel approaching to us...I was so excited to make a mistake but I made it. That day I decided that when I become an officer I will also use that method to help cadets to relief their fears and improve their self confidence... (Senior student no.25)

... I made my first VHF communication with a Russian vessel at open sea with the enforcement of chief mate. We made a short conversation. My communication style was not proper. Instead of saying "What is your last port of call? I said "Where are you coming from?" That conversation made me understand that I had to improve my VHF communication skills...(Senior student no.6)

.....chief mate supported me to talk through VHF. He encouraged me to talk with other vessels. First I was inhibited and excited but then I understand that I could not learn without making mistakes, so by using it I gained self confidence. According to me the most important thing is helping and supporting cadet during familiarization period and to teach them the right way... (Senior student no.3)

The results were compared in order to improve VHF communication training among ESL cadets and to make recommendations to help other professors in the field guide their students in order to reduce anxiety when using communication devices; particularly when English is not the first language of the students.

### 3. Findings

The essays were analyzed at three phases; before, during and after the communication. Fear, anxiety, and hesitation are the most common feelings that cadets reported "**before**" their real first VHF communication experience. They mentioned the importance of encouragement from their training officers during that phase.

"**During**" their real VHF communication experiences, they most often reported feelings of excitement and fluctuations in confidence. Support from the training officers was important to them.

"**After**" the real VHF experience, students reported feelings of success and confidence.

Freshmen students mentioned that they were excited and afraid of making mistakes "**before and during**" their first VHF communication practice on the navigation simulator. Lack of English practice and self confidence were the main reasons. After, they concluded that the VHF communication practice was a very good and useful practice; and provided an opportunity to have experience in maritime English which increased their confidence before their on-board training.

## 4. Conclusions

During VHF Communication for ESL Cadets, “Communication Apprehension” is found to be a common difficulty which has to be overcome with the support of both maritime instructors and training officers onboard. Since communication apprehension occurs in many situations, including maritime communications, and since maritime cadets will encounter situations which require them to use English, understand spoken English (including jargon), and act upon what they hear for the safety of all aboard ship, it is imperative that maritime academies provide plenty of practice in VHF communications in English. It is also imperative that maritime instructors encourage students and work closely with them in order to reduce student levels of anxiety.

## 5. Future Research Possibility

This paper delineates research done among Turkish cadets at a Dokuz Eylul University Maritime Faculty. Because cadets of all nationalities experience CA when using a VHF radio, we propose to study what level of CA is experienced by native English speakers attending a U.S. maritime academy. We hope to get comparative data that will guide us toward developing instructional guidelines and benchmarks to improve the simulated VHF experiences and real-life experiences of students making their first few VHF communications. By reducing student anxiety through improved instruction and encouragement, it is hoped that all cadets who choose to enter the maritime industry will be both more competent and more confident when using English to communicate either ship-to-shore or ship-to-ship.

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