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WORLD MARITIME UNIVERSITY

Dalian, China

**AN EMPIRICAL RESEARCH ON CHINESE
SEAFARERS' COMMUNICATIVE
COMPETENCE TRAINING AND ASSESSMENT
METHODS**

By

LI YAN

The People's Republic of China

A dissertation submitted to the World Maritime University in partial
Fulfillment of the requirements for the award of the degree of

MASTER OF SCIENCE

In

Maritime Safety Environmental Management

2019

DECLARATION

I certify that all the material in this dissertation that is not my own work has been identified, and that no material is included for which a degree has previously been conferred on me.

The contents of this dissertation reflect my own personal views, and are not necessarily endorsed by the University.

Signature: _____

Date: _____

Supervised by: Professor Zhang, Renping

Dalian Maritime University

Assessor:

Co-assessor:

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ABSTRACT

Title of Dissertation: **An empirical research on Chinese seafarers' communicative competence training and assessment methods**

Degree: **MSc**

Seafarers' English communicative competence is critical for maritime safety especially in the multinational crewed working context. Chinese seafarers are the largest in number, but their ECC has been one of the major obstacles preventing them from entering the international maritime labour market. This chronic problem has been widely discussed, but little sign of improvement is detected.

This thesis reviews the significance of ECC to the current shipping industry, and the status of Chinese seafarers' ECC. It then uses system approach to investigate the root causes of the Chinese seafarers' communicative incompetence and identifies that the current ME test system has negatively affected the ME teaching and learning in China and needs to be changed. A new ME assessment framework is constructed and justified on the basis of theoretical and practical underpinnings as well as the first-hand empirical findings. Some suggestions are put forward in the end.

In this thesis, a combination of research methods are used, including literature review, semi-structured interviews and on-line questionnaire surveys.

KEY WORDS: ECC, Chinese seafarer, ME assessment, multinational crew

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LIST OF ABBREVIATIONS

AIS	Automatic Identification System
ATC	Air traffic control
BIMCO	Baltic and International Maritime Council
CMSA	China Maritime Safety Administration
CoC	Certificate of Competency
ECC	English Communicative Competence
ESP	English for Specific Purposes
GE	General English
GME	General Maritime English
ICAO	International Civil Aviation Organization
ICONS	International Commission on Shipping
ICS	International Chamber of Shipping
IMEC	International ME Conference
IMELA	International Maritime Education Lecture Association
IMO	International Maritime Organization
ISM	International Safety Management Code
LNG	Liquefied Natural Gas
LPG	Liquefied Petroleum Gas
LSP	Language for Specific Purposes
MACROCOM	The impact of Multicultural and Multilingual crews on MARitime COMmunication
ME	Maritime English
MET	Maritime Education and Training
MSC	Maritime Safety Committee
SIRC	Seafarers International Research Centre
SMCP	The Standard Marine Communication Phrases
SME	Specific Maritime English
SMNV	Standard Marine Navigational Vocabulary
STCW	International Convention on Standards of Training Certification and Watchkeeping for Seafarers 1978 as amended 1995
TOSE	The Marlins Test Of Spoken English
UN	The United Nations
VTS	Vessel traffic Service

CHAPTER 1 INTRODUCTION

1.1 Background

China boasts the largest seafarer population in the world, with 1,575,000 registered seafarers till the end of 2018, but Chinese seafarers' growth in the share of the international labour supply market is marginal. According to the latest statistics, roughly 9% of the Chinese seafarers are employed by foreign vessels.(Chinese Seafarer Development Report 2018). Many factors hamper Chinese seafarers from working on foreign ships. For example, Robyn (2011) mentioned that the industry recruitment patterns caused the lack of opportunity for Chinese seafarers to work on board multinational crewed ships. Foreign enterprises can not recruit or train Chinese seafarers without obtaining proper licenses from the competent authorities in China, which means Chinese seafarers generally have to sign contracts with a Chinese crewing agency who will then contract them with foreign ship owners. This greatly reduces seafarers' earnings and makes the job less attractive. (Shipping on Line, 2014). However, many researches point at lacking English communicative competence (ECC) as one of the main barriers for Chinese seafarers to compete globally. (Fan, 2017).

Communication in English is central to all those involved in the international shipping operations and effective communication is one of the key elements contributing to safety at sea due to the international nature of the shipping industry. Among the 80% of the accidents caused by human factors, one third of them are the result of communication failures or misunderstanding in communication. (Ziarati, 2006). Chinese seafarers have long been frustrated by the title of “incompetent English communicators”, who are deficient in communicating in English for both work and living aboard. This issue has been widely acknowledged within the sphere of shipping and maritime education and training (MET) in China but despite the

efforts exerted not only by the seafarers themselves but also other parties involved such as China Maritime Safety Administration (CMSA) and MET institutions and Maritime English (ME) teachers, the problem gains little sign of lessening, and more pessimistically, some researchers argue that young generation of Chinese seafarers are nothing better in English communicating or even worse. (Fan, 2017).This is so daunting that some people even pin the hope on the use of modern technology such as instant translation devices to tackle the language barriers rather than on measures to improve Chinese seafarers' English.

Previous studies on this problem is sufficient in number, but they are mostly fragmented and general, and according to Liu's quantitative research of 794 articles on ME study in China from 1979 to 2013, there is a lack of quality studies and empirical studies. (Liu, 2014, Fan, 2017). Wu's review of 460 articles published between 2000 to 2015 in China regarding ME education presents the similar picture that studies on cultivating the ECC of Chinese seafarers are inadequate and non-empirical studies are dominating. (Wu, 2018). In addition, merely a small number of publications concerning Chinese seafarers' ECC are available in English, apart from those in International Maritime English Conference (IMEC) or International Maritime Education Lecturers Association (IMELA) annual conference proceedings and some reports from Seafarers International Research Centre (SIRC) at Cardiff University. A series of relevant articles by Fan, et al in the Marine Policy in the last two years explored the problem from different angles, and offered some insights to the author, but some areas left untouched, such as the ME test.

1.2 Objectives of research

The primary objective of this thesis is to target the ME test, the key factors affecting the Chinese seafarers' ECC and to bring out some constructive suggestions for

improving it. To make this dissertation more concrete, a projected ME assessment framework is constructed and justified for its feasibility and advantages. In fact, this dissertation is to answer the following questions:

1. Why is the topic of Chinese seafarers' ECC worth researching?
2. Why is the ME test one of the major contributor factor to Chinese seafarers' poor ECC?
3. What are theoretical and practical foundations for establishing an effective ME test?
4. What is a prospective ME assessment like?

1.3 Methodology

This study used combined research methods, including literature review, semi-structured interviews, questionnaire surveys and comparison. Two major theoretical models used were systematic approach and wash-back effect theory of language assessment.

The main literature works covered in this thesis are IMO regulatory instrument and Module courses, books and journal or online articles on human elements, communicative competence, ME assessment and standards, English for specific purposes (ESP) assessment, Chinese seafarers' communicative competence, Chinese ME test, etc. Some internet websites were also consulted such as research gate, language testing, Alert, IMO, Safety at Sea, to name but a few.

Semi-structured face to face and telephone interviews were performed. As is shown in Table 1, four categories of interviewees are involved in this study.

Table -1 General information about interviewees

Category	Number	Rank or nationality
ME teachers	6	Chinese
Chinese seafarers	6	2 captains, 1 chief officer, 1 second officer, and 2 cadets
CMSA officials	2	Senior
non-Chinese seafarers	4	1 from India, 2 from Turkey, 1 from Philippine

Source: Author

On the basis of the findings from the interviews and the literature review, three online questionnaires are designed, assessed, distributed, collected and analyzed on wjx, a Chinese online survey tool widely used by Chinese researchers. The details are shown in Table 2.

Table - 2 General information about the three questionnaires

	Participants	Number of valid feedback	Major Contents
Q.1	Chinese seafarers	242 (with multi-lingual work experience) /438	Personal information; view on their weakness in ECC; view on ME assessment; Suggestions
Q.2	Non-Chinese seafarers (India, Philippine, Russia and Bangladesh)	30 (officers)/59 (ratings and officers)	Personal information; view on Chinese seafarers' weakness in ECC and possible causes of the communication problems; Suggestions
Q.3	Chinese ME teachers	45/45	Personal information; view on students' weakness in ECC; view on ME assessment; Suggestions

Source: Author

1.4 Structure of dissertation

This dissertation consists of seven chapters followed by two appendices.

Chapter Two reviews the significance of the research on Seafarers' English Communicative Competence. The communicative competence and the English competence in the maritime context is firstly defined. The importance of ME for seafarers in the current shipping sector is stressed. Chapter Three provides a systematic analysis of the Chinese seafarers' ECC to further prove the necessity for the study. The conclusion is that the current ME test system may not be beneficial for improving the ECC and can be perceived as one of the root causes of the language barriers for Chinese seafarers.

Chapter Four showcases the current ME test system and analyses its negative impact using washback effect theory in language assessment. Chapter Five seeks further theoretical and practical underpinnings for constructing an effective ME assessment by using the LSP assessment theory and Marlins tests and ICAO proficiency tests plus the findings of surveys. Chapter Six presents and justifies the new assessment framework. The last chapter is the conclusion and suggestions including the limitation of the study and digital disruption comment.

CHAPTER 2 Significance of research on Seafarers' English Communicative Competence

2.1 Defining communicative competence

2.1.1 Communicative competence

Hymes first introduced the linguistic notion of communicative competence to include both linguistic competence and sociolinguistic competence, emphasizing understanding social rules for the actual use of a language for interaction. (Dongyun Sun, 2014). In the context of L2 teaching, communicative competence is defined as a synthesis of four components, namely, grammatical competence, social-linguistic competence, discourse competence and strategic competence. Wen (1999) argued for the importance of cross-cultural communication in the study of communicative competence and proposed her own model for “cross-cultural communicative competence”.

Despite the diverse models and notions, the core of communicative competence is linguistic competence and strategic competence which covers all non-linguistic components(Sun, 2014). But given the word limits and the complexity of strategic competence, such as the culture elements which influences communication enormously and will be researched in the future, this thesis mainly focuses on the linguistic competence.

2.1.2 Seafarers' English communicative competence

Effective communication is important for maintaining the safety of life and property at sea as well as for preventing marine pollution. Fully aware of this, the IMO has been actively involved in establishing legal framework and providing instructions

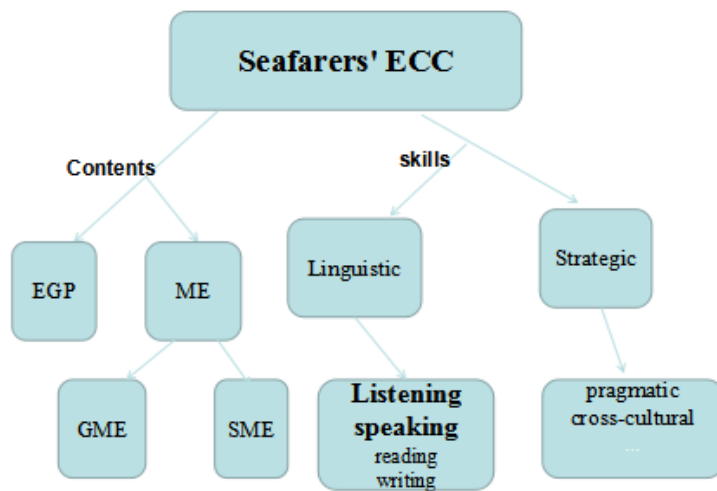
regarding communication and language skills to MET institutions. The Standard Marine Navigational Vocabulary (SMNV) was adopted in 1977, and amended in 1985 to tackle the language problem in communication on board multinational ships. In 1984, the SEASPEAK, a linguistic approach to deal with language problems was published, though not officially adopted. In 1997 at its 68th session in 1997, the MSC (Maritime Safety Committee) adopted The Standard Marine Communication Phrases (SMCP) and made its compulsory use a requirement within the International Convention on Standards of Training, Certification and Watch-keeping for Seafarers 1978 as amended in 1995 (STCW 78/95) for officers in charge of a navigational watch on ships of 500 gross tonnage or more. While STCW 78 prescribed communication ability requirement, with emphasis almost entirely on language knowledge, the 1995 amendments shifted its focus to practical skills and competence. The 2010 Amendments to STCW Convention further stressed communicative competence rather than sea service or period of training. (Model course 3.17, 2015). In STCW code Part A Table A-II/1, (navigation at operational level), competence means to “use the IMO Standard Maritime Communication Phrases (SMCP) and use English in written and oral form”. It emphasizes *use* rather than *knowledge* of the language, which agrees with Hyme’s concept of communicative competence.

But the English commonly used in the shipping context is different from the English used for General Purposes (EGP), and it belongs to the linguistic branch of English for Specific Purposes (ESP). It is called Maritime English (ME). The widely quoted definition of ME by Trenkner is “the entirety of all those means of the English language which, being used as a device for communication within the international maritime community, contribute to the safety of navigation and the facilitation of the seaborne trade”. It also stresses that the function of the ME is a tool for communication, and that ME is an important contributory factor to safe navigation

and seaborne trade development. As per Model Course 3.17(2015), ME is further categorized into general ME (GME), specific ME (SME).

Additionally, a ship is also called a mini-society, both a work place and a living place for seafarers. The communication in life is indispensable for seafarers' well-being, both physical and mental, which can certainly affect safety at sea. Therefore, basic EGP is also a part of English the sea workers need.

Further, communication skills include reading, writing , listening and speaking four aspects. But in this thesis, the communicative competence focuses on the listening and speaking ability. Because on the one hand the research time and resources is limited and on the other, it is the most important part of linguistic competence for seafarers not only in daily life but in particular in case of emergencies where clear verbal communication can save lives and the environment. (Pyne & Koester , 2005; Fan, 2017) A report of a 25 shipping company managers survey states that for work on board, the importance of English functions is in the order of listening, speaking, reading and writing. (Wu, 2018) On top of that, findings of many researches indicate that insufficient listening and speaking ability is the major language barrier that bothers Chinese seafarers.(Wang & Fu, 2007, Fan, et al, 2017)



Source: author

Figure 1 - Defining Seafarers' ECC

Source: Author

Figure 1 is the summary of seafarers' ECC discussed above and in this thesis, seafarers' ECC is narrowly defined as seafarers' EGP and ME listening and speaking ability to communicate strategically for work and life. This topic may sound a cliché given the abundance of literature work about it, however, its significance can not be underestimated.

2.2 Reiterating the significance of ECC for seafarers

2.2.1 Growing demand for seafarers

The application of modern technology to equipment on ships and to the shipping operation process has not dramatically reduced the manning requirements on board, at least cannot do so before the realization of completely unmanned ships. And the steady global economic development has boosted the international seaborne trade and become the catalyst for building more ships and employing more crew. As per

BIMCO/ICS predictions in 2015, about 16,500 more officers are needed in 2015 and another 147,500 officers will be needed to service the global merchant fleet by 2025.

Although the supply of officers is predicted to be on the growing trend, it is projected to be slower than the increasing demand for officers, in particular for engineer officers at management level and competent officers for ships for specialized purposes including chemical carriers, LNG and LPG carriers according to the report. One report by International Commission on Shipping (ICONS) stresses the need to promote the training for seafarers to prevent a serious shortfall in the supply because “the quality of the industry ultimately depends on the quality of the people in it”. (ICONS 2000, p. 37). Similarly, Horck (2004) argues that the industry should focus on the human element, rather than spend increasing amounts of money on bridge layout and increased automation. One key components of human element in the context of shipping is seafarers’ ECC, in particular, when multinational crewed ships become commonplace. Besides, open and free communication promotes seafarers’ participation in the operation and hence their occupational health condition. (Baumler, 2018)

2.2.2 ECC problems in the multinational working environment

The importance of ECC for seafarers is growing with the changes undergone in the shipping industry and the global economic development. Multilingual crewed ships that emerged in the 1970s have become something quite common. According to Trenkner, about 90% of the global merchant fleet are manned with multicultural and multilingual crew. (Trenkner 2000). This is the result of modern ship management evolution where the goal of reducing operation cost and gaining economic profitability is achieved by recruiting low-cost labour from developing countries, using de-flagging method, and attracting Western technology and capital investment.

In addition, research shows that over 10% of these multinational fleet are manned with crews of over five nationalities. (Maria Progoulaki & Michael Roe, 2011). A report titled “Transnational Seafarer Communities’ by SIRC in Cardiff states that “Seafarers frequently suggested that communication difficulties were the only, or the main, drawback of mixed nationality crews.” (Valerie (2006)

Maybe it is too mild to call the communication difficulties a “drawback”, considering the fact that communication failure is one of the major casual factors of maritime casualties according to the results of accident investigation. Pyne & Koester (2005) investigated some cases of accidents that were closely related to misunderstandings due to culture and language differences between the crew and the pilot, the crew and the passengers on passenger vessels, plus the external communication and VHF communication with other vessels. They also justified that it was possible to reduce the happening of accidents directly related to poor communication on the account that most of the accidents occur due to poor level of understanding English .

But this “drawback” is not easy to overcome, because,above all, major seafarer suppliers at present are the developing countries or more precisely, the regions where economic power is still weak, or the education budget is still not abundant enough to provide sufficient and proper education. However, if the limited financial and personnel resources can be managed in a much efficient manner, prioritizing the key subjects in urgent need of improvement, the future still deserves aspiring. Given the ECC is the critical issue for ensuring safe shipping and happy living on board, it should be looked into urgently.

2.2.3 Need of ECC in the modern maritime context

In the maritime context, safety of the vessel is built on a complex interactions of

three elements, namely, humans, machines and organizations (Baumler, 2018). And human elements play an critical role in maintaining the safety culture, and communication in this context is the key component. But some people argue that human communication can now be less important with the application of high-tech devices. For example, the use of AIS can reduce seafarers' reporting to VTS centers before ships' arrival at ports. This is true to some extent, but AIS cannot totally replace human communication as long as there are human on ships. As Trenkner (2018) argues in a research report:

A reliable communication still depends on a great deal on the communicative competence in Maritime English. It would be lightheaded to relax the efforts in Maritime English training of Navigation Officers for the only reason that technological innovations here AIS, facilitate the exchange of intelligence between ships and VTS Centers.

Another view is that with instant translating devices capable of interpreting foreign languages almost real time, human may not need to learn foreign languages and can rely on them when talking with a foreign language speaker. But in many shipboard scenarios, especially in case of emergencies, such as collision, it is quite possible that before the device is turned on and language is chosen, the disaster already begins. Therefore, we can briefly sum up that the ECC is a still critical element in the safety system on ships and worth our attention to improve it .

CHAPTER 3 Systematic analysis of Chinese seafarers' ECC

3.1 General comment on Chinese seafarers' ECC

Chinese seafarers' ECC has drawn criticism from many parties:

The final report of the MACROCOM project (The impact of Multicultural and Multilingual crews on MARitime COMmunication) in 1999 revealed that Chinese seafarers' communicative failures led to maritime accidents and some specific difficulties included poor communicative competence in ship to ship or ship to shore communication, inability to understand instruction books, poor ability to respond in emergency and little knowledge of culture diversity. (MARCOM final report ; Tang, 2008).

Reports of study on Chinese seafarers' ECC by the organization of shipowners showed that Chinese seafarers were in general low in ECC, especially the listening comprehension ability that obviously slowed down work efficiency and even led to accidents. It also revealed the polarized state of ECC, a great difference between those good communicators and poor ones.(Tang, 2008).

Another survey carried out by China Maritime Safety Administration (CMSA) to obtain the views of seafarer crewing agencies and foreign shipowners observed that 44.9 % of the respondents addressed the poor ECC of Chinese seafarers. (Gu, 2005).

The result of the recent semi-structured interviews of 12 seafarer employers done by Fan (2017) showed that 75% of them claimed the Chinese seafarers were not competent in English communication. More than half of them claimed there was a declining trend in the last decade. (Fan, et al, 2017). They further asserted that

English communication deficiency was the first major barriers that prevented Chinese seafarers from entering the international maritime labour market.

Around 90% of maritime English teachers in China (n = 25) interviewed in a research agreed that in recent years the ECC of Chinese maritime cadets had been gradually worsening. (Fan, et al. 2017) And 5 out of 6 of the ME teachers interviewed in this study agreed that the ECC of their students were poor and 50% of them were pessimistic about the future students, complaining that the incoming students' English foundations were not improving at all despite the use of high technology in English learning and reforms on English education in China.

Chinese seafarers themselves rank their ECC poor to fare in a self-evaluation given by Fan. (Fan, 2017) In this study, findings of Questionnaire 1 show that the average score of ECC given by 473 Chinese seafarers is 68.11, while the average score by 242 with work experience on multinational ships is much higher, 74.09. By contrast, findings of Questionnaire 2 reveals that 30 foreign seafarers counterpart respondents from Inida, Philipine and Turkey give themselves a much higher score of 84.1. Although it is not an authoritative number, but at least it to some extent demonstrates the gap between Chinese seafarers and non-Chinese seafarers and that Chinese seafarers are less confident about their ECC.

To get a more precise view from insiders, views of foreign seafarers who once worked with Chinese seafarers are investigated in Questionnaire 2. As is shown in Figure 2, although most of the foreign seafarers have pleasant communication experience, most of them experienced more difficulties with Chinese seafarers than with those from other countries. This agrees with the finding in a survey of 28 Japanese VTS officers by Uchida and Takagi showing that Chinese seafarers' spoken

English is one of the three most difficult to understand among 19 nationalities of seafarers because of their heavy accents and poor vocabulary. (Uchida, Y. & Takagi, N. (2012). cited from Fan, 2017).



Figure 2 - Questionnaire 2 findings

Source: author

It can be concluded that Chinese seafarers' poor ECC in general was a fact beyond any dispute. The result in Fan's research (2018) that no significant differences existed across age or rank group also proves that the situation is not improving.

Something must be done to change it.

But before that, the root causes must be identified.

3.2 Systematic analysis of factors affecting Chinese seafarers' ECC

3.2.1 System approach theory and its application

System is defined by De Rosnay (1975) as "group of elements dynamically interacting and following a goal or finality." The concept of system refers to the complex unit of an interrelated whole, to its characters and properties. (Morin, 1999) It stresses the interrelation of individual elements towards a common objective or

purpose. The system approach assumes that to better understand something complex, breaking it down into simple easy to understand units, placing individual elements in their context and observe the connection and relationship between these elements to obtain a clear view of the complex phenomenon.

Nowadays, system approach is widely used to address many political, social, economic and environmental challenges around us, because according to Meadows, when we see the relationship between structure and behavior, we will know how systems work. An important function of a system is to make sure about its own perpetuation. (Meadows, 2008)

Given the grave complexity of the problem of Poor ECC of Chinese seafarers, a systematic approach is needed to unfold its root causes. Therefore, a system is built with ECC at the center, all relevant parties are identified as elements surrounding it and all the elements are interrelated forming a dynamic system. Let's assume improving the ECC of Chinese seafarers is the finality of the system that makes the links and connections meaningful and then find out the real situation. It is borne in mind in the analysis that initiatives taken for one element do not necessarily bring about productive results to the system as a whole and sometimes the effect can be negative. (Baumler, 2018)

3.2.2 Analysis of Chinese ECC system



Figure 3 Chinese seafarers' ECC system

Source: Author

As is shown in Figure 3, the ECC system consists of two subsystems named education and function. The former includes four interrelated elements: seafarers, MET organizations, ME teachers and CMSA which is classified in this subsystem because its policy and action have strong impact on the measures taken by seafarers and the education-related institutions and teaching staff. The function subsystem consists of two major elements: ship owners or seafarer employers and crewing agencies, who are concerned about how ECC of their employees affect their employment and performance on ships respectively. The contexts include social context and economic context and education contexts. Due to the word limit, only those shipping-related elements in the contexts are discussed.

The two subsystems are interconnected since the education received will influence

the seafarers' performance at work and the employment prospect will influence the conduct of those in education system. Research shows that ECC is one of the top determinants for seafarers to be employed for working on a foreign ship. (Fan, 2017). Shipowners will assess the seafarers' ECC by a job interview with all professional questions asked and answered in English. This seems a good impetus for seafarers wishing to work on a foreign ship to improve their ECC. But its effect is temporal only and have little lasting effect on seafarers' ECC. For those securing the job, they are able to use it in work and become better English communicators. As the foreign seafarers interviewed mentioned some Chinese seafarers they worked with were pretty fluent in ECC and even better than them. While for those who fail to get the job, they may give up when they find the gap between their language ability and the requirement. So the employer's impact on seafarers exists, but short-lived.

In the similar vein, the crewing agencies' interest is to "sell" as many seafarers to the shipowners or employers as possible. They may offer pre-interview ECC training sessions but what they emphasize is the skills used for securing the job , and the candidates' actual ECC is not their real concern. After all, there is a large pool of seafarers for them to choose from, and they just need to pluck the top ones. Seeking good relationship with top MET institutes to get the best prospective cadets will be a better option than investing money into long-term training programs to improve the ECC of the seafarers. But we cannot deny there are crewing agencies committing to qualified training programs to cadets in China, such as SinoCrew Maritime Services, crewing company, but they are few in number. Then we need to turn to the education subsystem.

In the context of prosperous economic booming in the last four decades in China and the comparatively steady world economic development, the composition of Chinese

seafarers changed greatly. At present about 70% of maritime cadets are from rural areas according to a research. (Qiang, 2014). English education in those regions starts at a late age of 10 to 12 and is generally done poorly due to the weak education conditions, so when they are enrolled in MET institutes, their English foundation is poor, in particular the English listening and speaking ability. What's worse, the English they need to master consists of both GE and technical ME. According to one cadet interviewee, "it is hard to start from the very beginning and I have no idea where to start. It's totally beyond me." Three seafarers interviewed revealed that they did not have the self-learning ability or willpower to study English by themselves, and would give up quickly when there was no external motivation such as an exam or a job interview. Besides, when they are taking their breaks ashore, they have few opportunity to use English in their communications. The on-line English courses for seafarers are limited and not easily accessible to Chinese seafarers and even these are available, they may not necessarily be catered to the level or needs of the potential learners, or the learners may have difficulty to choose the suitable one for themselves. Therefore, for the lump-sized seafarers with poor English foundations, it's tough and almost impractical to overcome the language obstacle by their own efforts. While for those whose ECC is superior to the average, they can find on-land jobs more easily particularly in the sector of shipping, so they quit sailing after a few years at sea.

The big motivation for cadets or seafarers to study English is for exams. Chinese education has long held the "exam-oriented" reputation and ME teaching and training is no exception. About 82% of respondents of Questionnaire 3 prepared for the ME assessment by doing extra listening and speaking exercises, and 70% (n=242) of them passed it the first time they took it. However, studying for exams seem not helpful in actually improving their ECC, considering their low self-evaluation and the negative comment from relevant parties, their employers in particular. How can

MET institutions and teachers help?

The university enrollment expansion project started in 1999 and has offered more high school graduates the opportunity to pursue higher education, and the score required for students entering navigation and marine engineering majors is comparatively low, which may mean poor English foundation. But for those good ones among the poor students, majority of them transfer to another major (the top 20% in a university investigated) or choose land-based work after graduation. According to a recent report on maritime-related major graduates' employment status (Yao, et al, 2017), in the top maritime university they investigated, the percentage of post-2002 graduates choosing to work on ships are decreasing and maintains at a level of 50%. For graduates in the last decades, only 40% of them still work as seafarers 5 years after their graduation from the university. So maritime university graduates finally enter the seafaring circle are generally not the top product of the those universities, hence their ECC on average is low.

In addition, those who fail the college entrance exams and end up in maritime vocational schools are generally weak in academic performance and have a very poor English foundation according to teachers from those institutions. This situation is worsening because of the growing enrollment difficulties in the context of declining young population in China (result of one child policy). Maritime vocational schools in particular have to lower their academic requirements to get more students in in order to survive. Therefore, Even though MET institutions attach importance to English education, the improvement can be marginal considering the limited time, the poor language foundation, students' low learning ability and above all the "high" requirements they must meet.

For teachers of maritime English in China, they are tortured by the mismatch between the students' competence and the ECC requirements. And they have to make passing exam their aim of teaching rather than to improve students' ECC. As is shown in the findings of Questionnaire 3, 60% (n=45) of the them agree that they choose passing exams as their aim of teaching. This is because the passing rate represents their teaching ability and in some cases, and is closely linked with their salary, promotion and fame. According to Wang and Ding (2013), passing the exams is the common goal for teacher and students, and assessment standards is the "teaching and learning guide", question banks are teaching materials and classroom teaching is the exam simulation; everything is exam oriented.(Wang & Ding, 2013) Teachers are very creative in exploring easier ways for students to remember or identify the answers. About 87% (n=45) of ME teachers do not think there is sufficient time to do English communicating tasks in class, and most students study just for exams, and they may skip classes when discovering the tasks are irrelevant to the exam, which discourages the teachers in return.

Another problem about ME teachers is that they are limited in numbers and qualifications. A lot of literature emphasizes a severe need of ME teachers with qualifications of both linguistics and maritime knowledge. As most employers interviewed by Fan agreed that the most outstanding issue was a shortfall of quality ME teachers. (Fan, 2017).

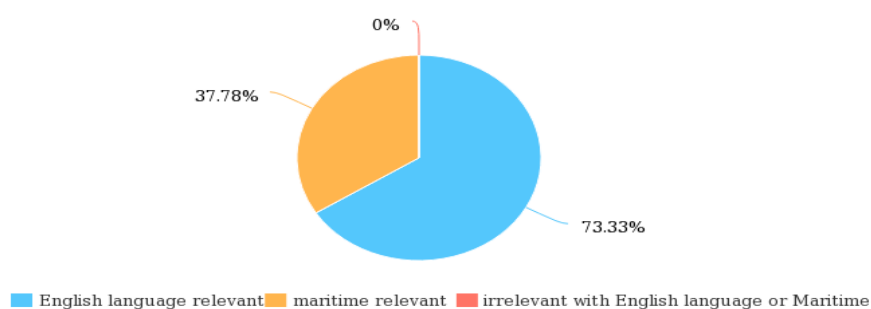


Figure 4 - Questionnaire 3 respondents' information

Source: author

In Questionnaires 3, five out of 45 have both maritime and English backgrounds, and 33 have degrees in English only. For those with linguistic background, they are not able to explain the special knowledge clearly, while for those from maritime background, they lack the proficiency in language teaching. The training for ME teachers are not adequate because of their heavy work load and limited fund from the MET institutions.

CMSA, the competent authority for certification, is responsible for the overall process of English exams including syllabus promulgation and updating, exam questions designing, exam organizing, performing, monitoring as well as paper grading and result disseminating. The objective is to ensure the requirements for seafarers' ECC by the STCW convention is met, or more specifically, the candidates passing the exam are competent in fulfilling the communication tasks in their work and life on board as is required by the conventions so that the safety of operations will not be compromised. According to one official from CMSA, their major concern is that the exam can be as just and fair to every candidate as possible and specific interpretations of the convention requirements is the foundation for all stages of the assessment. They generally update the exams as per the amendments made to the convention as well as the feedback from the examinee or trainers from the maritime education institutions. They are aware of the criticism about the ME test, but they are not capable of taking giant steps to reform the exams for many reasons: massive population of seafarers, limited number of assessors, limited up-to-standard facilities for exams, etc. They are also aware of the difficulties of the exam, but they are determined to follow the instructions of the Convention instead of lowering the

requirements for the seafarers. They exert more efforts on monitoring the exams to avoid cheating or reducing the impact of subjective interference in grading for the purpose of maintaining the fairness of the exam. Little attention is paid to the diverse effect of the exam on the examinee to improve their ECC.

3.3 Summary of the analysis

It can be observed from the analysis that the function subsystem needs seafarers with good ECC, but their influence is not longstanding, and if without strong sense of responsibility to take practical measures to change the situation because they just pick the top ones. In the education subsystem, the ME test becomes the key linking all the elements. The goals of MET institutions, seafarers and ME teachers are to pass the exams and the CMSA aims to maintain the standards of exams and ensure its objectivity and justice. Therefore, it can be concluded that it is not the improvement of seafarers' ECC but the exam that lies at the center of the system. It is the author's assumption that the current ME test system may not be beneficial for improving ECC and can be seen as one of the root causes of the language barriers for Chinese seafarers.

CHAPTER 4 Targeting the ME test in China

4.1 Introductory remarks

The Maritime English test has drawn massive criticism over years, but there are limited literature investigating specifically where the actual problem is by analyzing the exam in details with supporting theoretical and practical basis. This is partly because the design of the exam is governed by the CMSA and in respect of the majority of the researchers are teachers, their involvement in exam design and implementation is limited. Most researchers focus more on classroom teaching or teaching material design. As is reported in Wu's research, from 2000 to 2015, 320 articles, accounting for 70% of the literature on Maritime English published during that period of time are about classroom teaching, (Wu, 2018), while articles concerning the ME test are just 36, and also there is a lack of systematic evaluation. Therefore, in this chapter, the ME test for Chinese seafarers will be introduced, and the washback effect theory of language assessment will be utilized to detect the key factors leading to its negative impact on English learning and teaching in the MET institutions in China.

4.2 The ME test for Chinese seafarers

To comply with the IMO requirements for seafarers' communicative ability in English, the ME test is made mandatory for applicants of Certificates of Competency (CoC) in China. It consists of two parts: the ME written exam (hereafter the ME exam) and the ME listening and speaking assessment (hereafter, the ME assessment); the latter started from January, 1997 and it is the prerequisite for taking the former one. The written exam underwent four stages. The first national ME written exam started in January, 1988 and it included both objective questions and subjective questions, but the syllabus provided no detailed specification of contents to be tested.

(Sui, 2010) In 1997, some changes were made to add objective questions and deduct subjective questions. The syllabus coverage was broadened and made more specified. In 2004, all subjective questions were eliminated with objective questions left only, and the syllabus coverage is further expanded. (Sui, 2010) 2010 Manila Amendments to STCW 78/95 prescribed more detailed requirements for seafarers’ ECC, and corresponding changes were made to the Chinese ME written exam with more specific delineation of the contents, but no changes was made to the question types.

Table 3 - Changes of ratio of objective and subjective question in ME written exam

	87	97	04	11
Objective questions	55	80	100	100
Subjective question	45	20	0	0

Source: Author

Despite the changes made to the syllabus and adjustment of ratio of objective and subjective questions as is shown in Table 3, the focus of the exam has been on the professional knowledge, with basic general English knowledge a minor part. One typical example mentioned by Sui (2010) is the No.45 ME exam for the third officers engaged in international voyages,in which up to 79% of the questions were testing the professional knowledge.

The ME assessment for Chinese seafarers started in 1997. It underwent some changes in 2004, 2011 and 2016 respectively in its syllabus and question banks in line with the updating requirements of the IMO conventions and the feedback from examinee and relevant parties in the shipping. However, according to the officials from the CMSA, similar to the ME written exam, the changes are minor ones such as adjusting the syllabus, making corrections to the question banks or adding or deleting

questions. There are few changes in its structure, format, testing time, way of evaluation and testing result dissemination since its implementation in 1997.

As is shown in Table 4, the ME Assessment is composed of listening part and speaking part. They have a lot in common: both of them are done at computer terminals, and the papers are constructed randomly by the computers. They are both syllabus-based and rank-differentiated. The passing scores are both 60 or over. The major difference is that the listening part is automatically graded by the computer immediately after the candidate completes the listening test because all the questions are objective multiple choice questions, while the speaking test performance is rated by qualified assessors who will come to the designated well-supervised room to grade the papers. To ensure the fairness, one candidates' paper is divided into several parts and sent to different assessors.

Table 4 - General information of the ME assessment

	Listening	Speaking
Format	Computer terminal, test paper randomly constructed by computer	Computer terminal; paper randomly constructed by computer
Structure	Part I understanding sentences 20% Part II understanding short dialogues 30% Part III Understanding long dialogues and passages 50%	Part I Reading aloud 20% (One passage of less than 200 words) Part II Topic presentation 30% (One profession related topic) Part III Question answering 50% (Ten profession-relate questions)
Contents	Syllabus-based, ranks differentiated, SMCP- focused	Syllabus-based, ranks differentiated
Performance rating	automatically rated by computer; 100 in total, passing score: 60 or over	rated by assessors with qualifications. 100 in total, passing score: 60 or over
Time	No more than 60 minutes per person	

Source: author

The ME assessment is generally offered twice a year in June and December before the applicants taking the ME written exam for their CoC. Candidates can make it up five times within three years for each part individually. This assessment is important for candidates because they will be prevented from taking the ME written exam, which means they will not get the CoC.

The ME test is to ensure that the Chinese seafarers have adequate competency to fulfill their duties on board in compliance with the STCW convention. But the current status of Chinese seafarers' ECC and the criticism it has drawn prove that it is not valid in evaluating the actual ECC of the seafarers and its impact on the ME learning and teaching is not positive. Theoretical underpinnings should be introduced to further substantiate the problem.

4.3 The washback effect theory and its application

Washback effect is an important concept in language testing, and has been routinely used by large testing organizations including IELTS and TOFEL to secure evidence to support assessment use.(Green, 2013) One of the comprehensive definitions by Messick (1996, p. 241) is “the extent to which the introduction and use of a test influences language teachers and learners to do things they would not otherwise do that promote or inhibit language learning.” And to put it in a simple way, it is the impact a test may have on the teachers' teaching and students' learning behavior in preparing for the test.

Generally, washback can be seen as being negative or positive; the former means the test's content or format may constrain teaching or learning to narrow language ability, encouraging teachers and learners to adopt short-term learning skills, and the latter means a test can encourage good teaching and learning. (Green, 2013). Exams can

have a positive washback on teaching if they can get students to focus on text book learning. On the contrary, the washback can be negative if teachers teach to the exams in order for their students to achieve high scores (Djurić, 2015, quoted from Fan, 2017). It is, therefore, a valuable practice to detect and eliminate the negative factors and to promote positive ones so that an exam can not only play the role of bench-marking, or achievement checking but also the role of facilitating effective teaching and learning.

Table 5 is a list made by Brown (1997) summarizing the findings of previous researches into 16 factors concerning negative washback effect of language assessments under four headings, namely, the teaching factor, the course content factor, the course characteristic factors, and the time factor. Table 6 is a list of 28 factors in literature that have the potential of promoting positive washback effect of language assessments and they are categorized into test design factors, test contents factors, logistic factors, and the interpretation and analysis factors. Although the lists were not exhaustive, they laid solid foundations for the later empirical study on washback effect of language assessment. They will be used as a theoretical backbone for evaluating the ME test for Chinese seafarers and for constructing a new ME assessment framework.

Table 5 - Summary of negative washback factors

Teaching Factor	<ol style="list-style-type: none"> 1. Teachers narrow the curriculum (Alderson & Hamp-Lyons, 1996) 2. Teachers stop teaching new material and turned to reviewing material(Shohamy et al, 1996) 3. Teachers replaced class textbooks with worksheets identical to previous years, tests (Shohamy et al, 1996) 4. Unnatural teaching (Alderson & Hamp_Lyons, 1996)
Course content Factor	<ol style="list-style-type: none"> 1. students being taught "examination-ese" (Alderson & Hamp-Lyons, 1996) 2. students Practicing "test-like" items similar in format to those on the test (Bailey, 1996; Shohamy et al, 1996) 3. Students applying test-taking strategies in class (Bailey, 1996) 4. Students studying vocabulary and grammar rules [to tire exclusion of other aspects

	of language) Bailey, 1996)
Course Characteristic Factors	<ol style="list-style-type: none"> 1. Students being taught inappropriate language-learning and language-using strategies (Alderson & Hamp-Lyons, 1996) 2. Reduced emphasis on skills that require complex thinking or problem-solving (Alderson & Hamp-Lyons, 1996) 3. courses that raise examination scores without providing students with the English they will need in language interaction or in the college or university courses they are entering; also called this test score “pollution” (Alderson & Hamp-Lyons, 1996) 4. The tense atmosphere in the class (Shohamy et al, 1996)
Class time Factors	<ol style="list-style-type: none"> 1. Enrolling in, requesting or demanding additional (unscheduled) test-preparation classes or tutorials (in addition to or in lieu of other language classes) (Alderson & Hamp-Lyons, 1996; Bailey, 1996) 2. Review sessions added to regular class hours (Shohamy et al, 1996) 3. Skipping language classes to study for the test (Bailey, 1996) 4. Lost instructional time (Alderson & Hamp-Lyons, 1996)

Source: Jame Dean Brown (1997). The washback effect of language tests. University of Hawaii Working Papers in ESL, Vol.16, No.1, Fall 1997, p. 27-45

Table 6 - Summary of positive washback factors

Test Design Factor	<ol style="list-style-type: none"> 1. Sample widely and unpredictably (Hughes, 1989) 2. Design tests to be criterion-referenced (Hughes, 1989; Wall, 1996) 3. Design the test to measure what the programs intend to teach (Bailey, 1996) 4. Base the test on sound theoretical principles (Bailey, 1996) 5. Base achievement tests on objectives (Hughes, 1989) 6. Use direct testing (Hughes, 1989; Wall, 1996) 7. Foster learner autonomy and self-assessment (Bailey, 1996)
Test content Factor	<ol style="list-style-type: none"> 1. Test the abilities whose development you want to encourage (Hughes, 1989) 2. use more open-ended items (not selected-response items like m-c) (Heyneman & Ranson, 1990) 3. Make examinations reflect the full curriculum, not a limited part (Kellaghan & Greaney, 1992) 4. Assess higher-order cognitive skills to ensure they are taught (Heyneman & Ranson, 1990; Kellaghan & Greaney, 1992) 5. use a variety of examination formats, including written, oral, aural, and practical (Kellaghan & Greaney, 1992) 6. Do not limit skills to be tested to academic areas (should also relate to out-of-school tasks) (Kellaghan & Greaney, 1992) 7. Use authentic tasks and texts (Bailey, 1996; Wall, 1996)
Logistic Factor	<ol style="list-style-type: none"> 1. Insure that test-takers, teachers, administrators, curriculum designers understand the purpose of the test Bailey, 1996; Hughes, 1989) 2. Make sure language learning goals are clear (Bailey, 1996) 3. where necessary provide assistance to teachers to help them understand the tests (Hughes, 1989) 4. Provide feedback to teachers and others so meaningful change can be effected (Heyneman & Ranson, 1990; Shohamy, 1992)

	<p>5. Provide detailed and timely feedback to schools on levels of pupils' performance and areas of difficulty in public examinations (Kellaghan & Greaney, 1992)</p> <p>6. Make sure teachers and administrators are involved in different phases of the testing process because they are the people who will have to make changes (Shohamy, 1992)</p> <p>7. Provide detailed score reporting (Bailey, 1996)</p>
Interpretation and analysis Factors	<p>1. Make sure the results are believable, credible, and fair to test takers and score users (Bailey, 1996)</p> <p>2. Consider factors other than teaching efforts in evaluating published examination results and national rankings (Kellaghan & Greaney, 1992)</p> <p>3. Conduct predictive validity studies of public examinations (This is to see whether selected exams are fulfilling their purpose) (Kellaghan & Greaney, 1992)</p> <p>4. Improve the professional competence of examination authorities, especially in test design (Kellaghan & Greaney, 1992)</p> <p>5. Insure that each examination board has a research capacity (In order to investigate, among other things, the impact of examinations on teaching) (Kellaghan & Greaney, 1992)</p> <p>6. Have examination authorities work closely with curriculum organizations and with educational administrators (Kellaghan & Greaney, 1992)</p> <p>7. Develop regional professional networks to initiate exchange programs and to share common interests and concerns (Kellaghan & Greaney, 1992)</p>

Source: Jame Dean Brown (1997). The washback effect of language tests. University of Hawaii Working Papers in ESL, Vol.16, No.1, Fall 1997, p. 27-45

4.4 Identifying the negative factors in the washback of the ME assessment

As has been discussed in the previous parts of the thesis that the ME assessment does not evaluate the ECC of the Chinese seafarers and it has enormously affected the ME teaching and learning. To evaluate the washback effect of the ME assessment from the theoretical perspective, the findings of surveys and literature review are listed in parallel to the four categories of negative factors summarized by Brown so that these factors can be clearly identified. The findings are shown in Table-7.

Table 7 - Identifying negative factors in the ME Assessment for Chinese seafarers

	Brown's summary of negative washback	Teachers (T) and students' (S) and Literature (L) statements about the ME assessment
Teaching factor	<p>1. Teachers narrow the curriculum</p> <p>2. Teachers stop teaching new material and turned to reviewing material</p> <p>3. Teachers replaced class textbooks with</p>	<p>1. 80% of ME teachers (n=45) said., "my teaching is influenced by the assessment format and content." (T)</p> <p>2. 71% of ME teachers (n=45) said, "My teaching contents are mainly the question bank "(T)</p>

	worksheets identical to previous years' Tests 4. Unnatural teaching	3. 60% of ME teachers (n=25) spent half of their class time teaching exam questions.(L) 4. Only 29% of ME teachers (n=45) said, " my teaching method is communicative"
Course content factor	1. students being taught "examination-ese" 2. students Practicing "test-like" items similar in format to those on the test 3. Students applying test-taking strategies in class	1. 71% (n=45) of ME teachers said, "My teaching content is focused on question bank.(T) 2. 29% (n=244) of the seafarers said, "I prepare for the exam by reciting the answers to the question bank". (S) 3. 30% (n=244) of the student said, ... 4. Students rely on rote memorization (T,S, L)
Course characteristic	1. Students being taught inappropriate language-learning and language-using strategies 2. Reduced emphasis on skills that require complex thinking or problem-solving 3. test score "pollution" 4. The tense atmosphere in the class	1. Exam-oriented, translation teaching method is used. (T &L) 2. Little time is used to teach communication skills (L) 3. ... my teaching is to make students pass the exam.(T) 4. 5% (n=45) of ME teachers think that the ME assessment can evaluate students' ECC. (S)
Class time	1. Enrolling in, requesting or demanding additional (unscheduled) test-preparation classes or tutorials (in addition to or in lieu of other language classes) 2. Review sessions added to regular class hours 3. Skipping language classes to study for the test 4. Lost instructional time	1. Not enough time for Communicative class activities (L) 2. 50% (n=6) of the teacher interviewees complained about insufficient teaching hours (T) 3. All the teacher interviewees agreed that explaining the answers to the questions in the question bank took major part of the class. (T) 4. 5 out of 6 student interviewees said, " I learned little about language interaction skills." (S)

Source: author

In terms of teaching factors, majority of the ME teachers make exam questions their teaching contents and spend over half of the class time explaining and even translating the questions, since their teaching aim is to make students pass the exam. Only a small percentage of ME teachers use normal language teaching method, such as communicative teaching in class. In Questionnaire 3, 29% of the ME teachers say they use communicative teaching in class, and further detailed check of the feedback shows that 69% of those teachers are experienced teachers who have been teaching ME for over 10 years, and 85% of them majored in English in their degree education

and 46% of them are teaching college students. It can be then inferred that the negative washback effect are stronger to ME teachers with less teaching experience and they tend to teach students from vocational training institutions who generally have poor English foundations. Please be noted that it is this group of students that constitutes the major part of future Chinese seafarer work force because the retention rate of college students in seafarer career is low and as per findings of the study by Yao, et al. (Yao, 2017) in one maritime university investigated, it is as low as 40% five years after their graduation.

In terms of course contents factor, 71% (n=45) of ME teachers make question bank their teaching contents, and most students, in particular, those with poor foundation have to recite the answers to pass the exam. Only 30% (n=244) of seafarers agree, “my ECC has improved after the assessment”. All the ME teachers interviewed said that their students learned ME primarily by rote memorization, and this agrees with the findings of some previous literature. The seafarers interviewed stressed that they could hardly remember any ME afterwards, and when they started their work in a multilingual work environment, the language barrier made them suffer. It can be seen that the assessment contents have great negative impact on seafarers’ ECC promoting.

The review of the previous literature and the survey results show that students are taught with inappropriate language learning strategies, such as translation, and rote memorizing of standard answers and little time has been allotted to communication skills learning, which leads to the test score pollution: the ME assessment can not truly evaluate the candidates’ ECC. These fast-learning short-cut skills may guide students in a wrong direction of language learning. One seafarer interviewed mentioned that he was good at doing multiple choices in listening because he had

figured out some tricks in getting the correct answer. This on one hand shows the validity of the assessment needs to be reviewed, and on the other hand, it reveals the negative impact of the ME assessment on the candidates' ME learning.

Similarly, the improper allotment of class time to communicative skill training also have some negative effect. Teachers are under stress of completing the teaching tasks, while the students obtain scarce opportunity to practice their language use, which makes their learning ineffective.

In short, the current ME assessment for Chinese seafarers have negative impact on both teaching and learning and measures should be taken to reconstruct a ME test system with reduced negative impact so that it can be part of solution to improve Chinese seafarers' ECC.

CHAPTER 5 Theoretical and practical study for constructing an effective ME assessment

5.1 Introductory remarks

The IMO model course 3.17 Maritime English (2015 edition) proposes that the principles of performance-based testing described in the IMO model course 3.12 on assessment, examination and certification of seafarers apply equally to the assessment of language competence. It emphasizes that the test of English language competence should target trainees' communicative competence and it should involve assessing the ability to combine knowledge areas of English language with the various language communication skills needed so as to conduct specific tasks and what's more, assessment should not test the trainee' knowledge of separate language areas alone. To establish such an assessment framework both theoretical underpinnings and practical examples and perceptions of different stakeholders are to be sought.

5.2 Theoretical underpinnings

5.2.1 LSP assessment theory

ME belongs to the language for specific purposes(LSP). Douglas (2000) considers LSP a special case of communicative language testing where test content and test methods are derived from target language use situation analysis, and the test tasks represent authentically the tasks in the target situations, taking into account the interaction between the test takers' language ability and the content knowledge. He emphasizes authenticity of the scenarios and the interaction between language knowledge and background knowledge or specific knowledge. It is true that issues, tensions and arguments permeate the LSP testing enterprise, and language testers

have long argued about the nature of authenticity, but its concept is valuable in helping industries to make decisions about the potential employee's competence to perform specific tasks in various settings whether academic or professional. (Grapin, 2018) Just as Devies (2001) claims that "if LSP tests have a positive impact on teachers and learners and do not predict less well than general proficiency tests, their value can be justified."

According to this theory, it's necessary to use sufficient shipping context clues to engage test-takers in the practical use of the language, or creating authentic maritime-relevant scenarios to prompt the needs for real communications in the ME training and tests. Unlike the present ME assessment, effective assessment system should target interaction, instead of testing the independent language knowledge or even professional knowledge.

5.2.2 The positive washback effect of language assessment

The washback effect theory in language assessment has been introduced in Chapter 4 and some negative impact of the current ME assessment has been identified. In establishing the new framework, factors to promote positive washback effect are to be analyzed in alignment with Brown's summary presented in Table 6. However, it is impractical to cover all the 28 factors in an assessment, so only some are chosen as examples to demonstrate the potential ways to improve the effect of the ME assessment. Table 8 is the summary of the analysis.

Table 8 - Summary of application of positive factor analysis in the ME assessment

Category of factors	Brown's summary points	Application in the ME assessment
Test design factors	Sample widely and unpredictably	Question banks should be wide and not open to public.
	Foster learner autonomy, self-learning	Emphasize self-learning and life-learning concept.
Test content Factors	Test the abilities whose development you want to encourage	Test the language use ability, or communicative ability rather than the knowledge.
	Use authentic tasks and texts	Use real shipping context scenarios.
Logistic factors	Insure that test-takers, teachers, administrators, curriculum designers understand the purpose of the test	Get more stake-holders involved in every stage.
Interpretation and analysis factors	Make sure the results are believable, credible, and fair to test takers and score users	Design more specific result descriptions.

Source: author

5.2.2.1 Test design factors

Sample widely and unpredictably: the ME assessment question banks should be wide and not open to public.

One reason for candidates to use the rote memorization skill in preparing for the exam is that the question bank is provided and within their ability to cram it into memory. If the question bank is not open to the candidates as many interviewees suggested, or it is so wide that it is impractical for the candidates to cover all the questions, then this kind of learning method can be discarded.

Foster learner autonomy, self-learning: the ME assessment should be designed to emphasize self-learning and life-learning concept.

The test should be designed to encourage learners' persistent self-learning. It should not be a one time or once for all event, conversely, it should be designed to measure the gradual improvement of the learner who can be encouraged to climb the ladder of

self-achievement through continuous self-governing learning. Continuous practice or exposure to the language to maintain the language ability is crucial because when the speaker is outside the context, in this case, when the seafarer is on a shore leave, his language ability is likely to decay.

5.2.2.2 Test content Factors

Test the abilities whose development you want to encourage: the ME assessment should test the language use ability, or communicative ability rather than the knowledge.

The contents should focus on the communication needs and scenarios, and stresses the possible factors that may hamper or interfere with the successful transmission of messages. About 43% (n=244) of the seafarer respondents say that they are more familiar with the working scenarios after the Assessment. The present ME assessment bases some of the questions on the SMCP which offers some real ship related scenarios and have some positive impact, but these are inadequate in number or format, so more practical communication settings should be included in the assessment contents.

Use authentic tasks and texts: use real shipping context scenarios in the ME assessment

It is widely accepted that language is a tool of communication. For a tool, the more frequently we use it, the more diverse situations we use it in, the better we can manipulate it, and the better function the tool can play. This is also true to ME. One seafarer education program experimented by a shipping company in China includes a one-year cadet training experience on multinational ships. Interviews of the students by the author in one of this classes show that nearly 80% of them (n=35) are most satisfied with their improvement in ECC during the one-year shipboard work

followed by their knowledge of work procedure onboard. It is certainly not practical to have all Chinese seafarers trained this way. However, we can create the authentic tasks with the help of advanced technology. If the ME assessment uses those authentic tasks, they will be extremely helpful for candidates to exercise the language meaningfully, rather than reciting the answers.

5.2.2.3 Logistic factors

Ensure that test-takers, teachers, administrators, curriculum designers understand the purpose of the test : get more stake-holders involved in every stage of the ME assessment.

It is true that the CMSA has invited many experts in the shipping and MET sector to participate in the ME assessment design and implementation, but the participation of the teachers are not sufficient and also most stages of the assessment is highly confidential due to the limitation of question bank, so more teacher participation is needed not just in the process of assessing the papers, but should be in the whole process.

5.2.2.4 Interpretation and analysis factors

Make sure the results are believable, credible, and fair to test takers and score users: more specific result description should be designed in the ME assessment.

At presents, the result of the ME assessment for Chinese seafarers is roughly shown as “pass” or “fail”, and there is no distinction if the candidate get 99 points or 60 points. There is no detailed descriptions as to the description of the ECC of the candidate in the report either. It is understandable given the large population of Chinese seafarers taking the assessment each year, but with a detailed description of the ECC, the employer may have a clearer understanding about the potential employee and in the pre-service training, the individual status can be considered. For

seafarers, they are able to target their weak points when doing self-study. This can be in no way difficult with the use of advanced computer software.

5.3 Practical ESP assessment examples

5.3.1 Comparing the ME test with the Marlins English tests

As has been described in Chapter 2, IMO has set out requirements for seafarers engaged in international ships to have adequate ECC in its instruments, including SOLAS, STCW convention and STCW code as well as the ISM code. Though there is a lack of internationally unified standard for ME assessment (Cole & Trenkner, 2008), some assessments are popularly used and accepted by many ship owners and crewing agencies. Among them, the Marlins English tests, are comparatively mature ME testing system, recognized by 11 flag state authorities as of Feb. 22, 2018.

The Marlins English tests for seafarers are computer-based on-line tests including a Marlins test for seafarers and an independent spoken test, named the Marlins Test Of Spoken English (TOSE). It is not a test by a competent authority of a flag state for certification, like the Chinese ME tests, but is a commercial one to provide shipowners and employers with an evaluation of the ECC of the potential employees, on the basis of which a recruitment decision can be made or a promotion opportunity can be granted.

The Marlins test is an on-line test in the format of all objective-questions selected randomly from a database of hundreds of questions. The tests are randomly organized to make sure that no two tests are identical. Each test is composed of a total of 85 questions which are broken down into 6 categories, including Listening comprehension (25 questions), Grammar (30questions), Vocabulary (15 questions),

Different sounds and pronunciation (9 questions), Reading (1 questions), and Time and numbers (5 questions). The final score is calculated as an overall percentage and can be shown as soon as the candidate completes the test. There is no time limit for taking the test but the recommended maximum time is 60 minutes. (Marlins website)

Both the Marlins and the Chinese ME exam are computer-based using objective questions to test the ECC, which is cost-effect and can maintain the impartiality and fairness of the test. The primary difference between the two is that in the Marlins test, the questions are designed to test the English knowledge rather than the professional knowledge. The difference between this test and the general English test, such as TOFEL or IELTS is that all the sentences, dialogues, and passages are set in the context of maritime activities. The Marlins test targets different aspects of English ability needed for seafarers to communicate successfully, such as the ability to understand different accents, to read vowels and consonants properly, to make up sentences correctly, to read numbers and time intelligibly, and to use the key vocabulary relevant to workplaces and duties, etc. While the Chinese written exam is designed to test professional knowledge in English and some teachers complain that even though your English knowledge is sufficient for you to understand the sentences, to many questions, without professional knowledge, you cannot get the correct answer.

Unlike the ME assessment in China, where the candidates face computers to complete the pre-set questions, the TOSE is done in the form of an online interview which lasts approximately 20 minutes and is based on a combination of visual prompts and three structured tasks. A framework of questions are suggested but the TOSE assessor is trained how to listen to what the candidate says and respond in an authentic way. To guarantee the credibility of the test, a standardized interview

format is to be followed by each assessor. This real people interview is not cost-effective and unfeasible considering the large population of Chinese seafarers and the shortage of competent ME assessors. However, this interview form of test can be used virtually though not in a person-to-person style.

Most importantly, the TOSE in conjunction with the Marlins' online test, can provide a complete profile of the seafarer's language proficiency. It offers a standardized means of recording and interpreting test results, and results can be used to highlight specific skill areas which require training. However, the Chinese ME assessment only offers a general comment of pass or fail, with no general diagnosis of the candidates' language proficiency, and no feedback to the candidates or their education or training institutions. Besides, in the ME test for Chinese seafarers, the connection between the written exam and the ME assessment lies in the professional knowledge covered by the syllabus, which has little value in assessing the overall ECC of the candidates.

Compared with the Chinese ME tests, the Marlins test focuses more on the English language communicative ability rather than seafarers' mastery of professional knowledge in English. Its good reputation in the shipping industry demonstrates in part its effectiveness in assessing seafarers' ECC. Although it is not reasonable or practical to copy the Marlins tests, something can be learned from it, such as its concept of testing English rather than professional knowledge.

5.3.2 Comparing the ME test with ICAO language proficiency test

Another test deserves our attention is the language proficiency test developed by the International Civil Aviation Organization (ICAO) which, similar to the IMO, is also a specialized agency of the United Nations (UN) System, responsible for international

air transportation. This test requirements are applicable to all ICAO member states. It is also an on-line test consisting of three parts. In part I, the candidate is asked to describe aviation theme pictures with as many sentences as possible. In part II, the candidate will answer the questions given by a “virtual interviewer”. In part III, a simulated ATC (Air Traffic Control) communication with read back on the basis of the scenario is created in the online module of the test. Similar to the ME assessment used for Chinese seafarers, the answers will be recorded and later assessed by an authorized language assessor.

This test has its own rating scales made up of six competence levels: pre-elementary, elementary, pre-operational, operational, extended and expert. Candidates are evaluated on the basis of six language categories: pronunciation, structure, vocabulary, fluency, comprehension and interactions. (Cole & Trenkner, 2018) In comparison, in the ME assessment for Chinese seafarers, such elements as pronunciation, intonation, content-relevancy and fluency are assessed, but there is the distinction of ranks rather than comprehensive competency levels. For seafarers of different ranks and roles, the syllabus may include different contents as per the duties prescribed in the STCW. The result is the summation of the score in each section, rather than a comprehensive analysis of the candidate’s English skills.

The result of the ICAO test, similar to the Chinese ME tests have bench-marking purposes, which means it can decide if the candidate can be certified. For example, the ICAO level of 4 or higher is officially recognized as being English proficient in aviation, and those who fail can not be certified. On top of that, to achieve ICAO level 4 you must score at least 4 in every category tested, which means comprehensive English ability is required. (ICAO website)What’s more, the test has to be re-taken every third year, meaning the candidate will have to continue learning

English to maintain the level of ECC. In contrast, for Chinese seafarers, only the minimum pass level is required and until the next level test is needed, they do not have to take the ME test again, which can be normally over 5 years. This may mean they will stop learning English in between, which is not beneficial to their English competence building.

ICAO Level	Pronunciation	Structure	Vocabulary	Fluency	Comprehension	Interaction
5	Pronunciation rarely causes a problem for understanding.	Uses basic grammar well. Makes mistakes with complex grammar, which sometimes cause a problem for understanding.	Has enough vocabulary to talk about common, work-related topics. Can paraphrase when necessary. Uses idioms sometimes.	Can speak easily about common topics. Can use correct discourse markers.	Can understand accurately about work related topics. Can understand a range of accents.	Responds quickly, with useful and appropriate replies. Can control a conversation.
4	Pronunciation only sometimes causes a problem for understanding.	Uses basic grammar quite well. Makes mistakes with basic grammar, which sometimes cause a problem for understanding.	Usually has enough vocabulary to talk about common, work related topics. Can often paraphrase when necessary.	Can sometimes speak freely and easily. Slow speaking does not cause a problem for communication. Can sometimes use discourse markers correctly. Fillers do not cause a problem.	Can understand mostly accurately about work related topics. May need to ask questions in complicated or unusual situations.	Usually responds quickly with useful replies. Can communicate even in surprising situations. Fixes misunderstandings by checking or confirming or clarifying.
3	Pronunciation frequently causes a problem for understanding.	Makes a number of mistakes with basic grammar which frequently cause a problem for understanding.	Often has enough vocabulary to talk about common, work related topics, but often uses wrong words. Cannot paraphrase often.	Often speaks too slowly, and this may cause a problem for communication. Fillers are sometimes a problem.	Can often understand accurately about work related topics. May not understand in complicated or unusual situations.	Sometimes responds quickly with useful replies. Can communicate in familiar situations. Generally can not respond in surprising situations.
2	Pronunciation almost always causes a problem for understanding.	Uses only a few memorized sentences and grammar structures.	Only knows some individual words or memorized phrases.	Can say some memorized phrases, but is very slow to search for expressions or to say unfamiliar words. Fillers are a big problem.	Can only understand some phrases when they are said slowly.	Responds slowly with replies that are not useful. Can only manage simple, routine conversations.

Figure 5 - Sample of ICAO Level chart

Source: ICAO website

By comparing ME tests for Chinese seafarers with other well-known language tests for specific purposes such as the Marlins tests and the ICAO language proficiency test, we can find that superficially the ME tests are similar to other tests, such as computer-based tests, objective question types, and pre-set questions answering and recording, afterward assessing, however, in-depth analysis reveals the difference in nature, that the ME tests for Chinese seafarers is to test candidates' professional

knowledge in English, a professional knowledge test in nature, not to test candidates' English skill, a language skill test.

5.4 Questionnaires findings analysis

The inarguable fact that Chinese seafarers' poor ECC presented in Chapter 3 may have a negative implication for the effect of ME Assessment because for most seafarers, even though they have obtained the CoC, they still experience difficulties in English communication on board a multicultural work environment. Since there is little empirical investigation in specific views on this issue, two questionnaires are designed to elicit views from two of the most important stake holders of the assessment: the test takers and the lecturers.

5.4.1 Comment on the present ME assessment

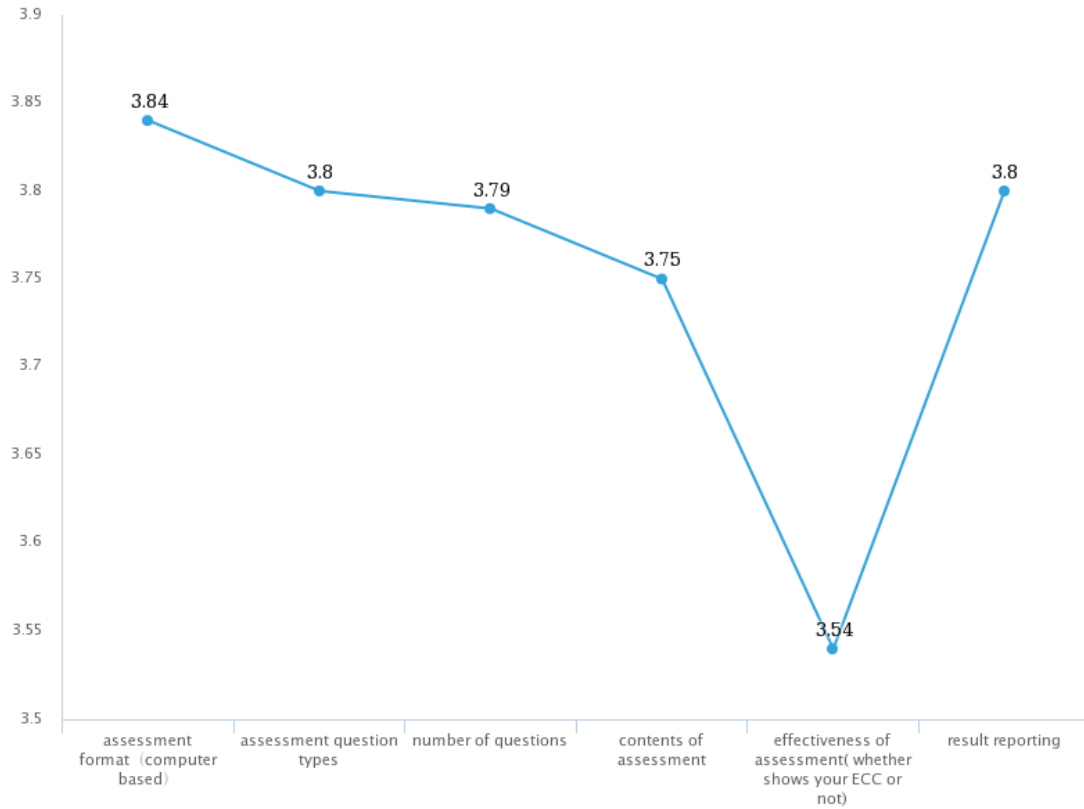


Figure 6 - Chinese seafarers' view on the ME assessment
Source: Questionnaire results downloaded from Wjq

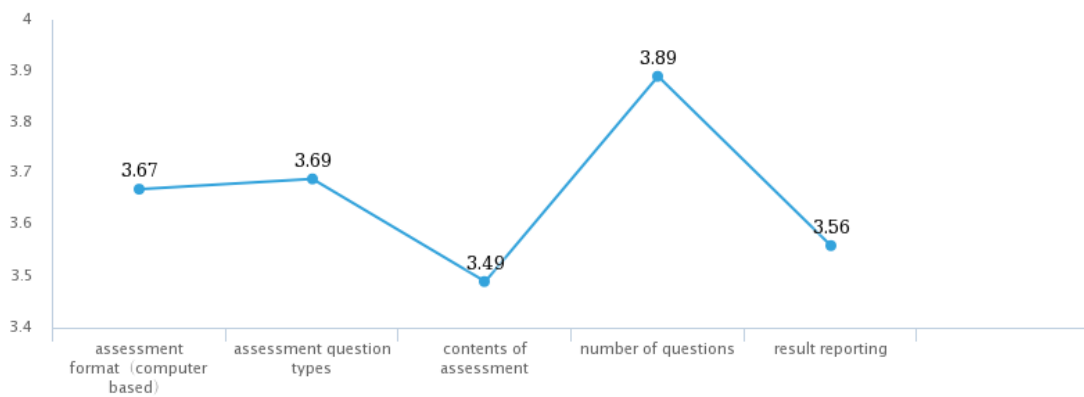


Figure 7 - ME teachers' view on the ME assessment
Source: Questionnaire results downloaded from Wjq

In Questionnaire 1 and 3, one question asks the respondents to grade different aspects of the ME assessment in the range of 0 to 5, the bigger the number, the better they think of the aspects. As is shown in Figure 6 and Figure 7, for the 5 common items evaluated, seafarers' average score is 3.796 while the ME teachers' is 3.66 and seafarers' evaluation is not very clearly differentiated, while the ME teachers' evaluation is more clearly differentiated. This means the ME teachers are less satisfied but more sensitive with the present assessment. This is reasonable given the seafarers as learners generally pay less attention to assessment factors, while the teachers need to pay more attention to different aspects of a test and design teaching accordingly. There is no strong dislike towards the assessment format or question types or question numbers. Both parties give the lowest score to the contents of the assessment, which shows the need for changing the contents. The seafarer and ME teacher interviewees also made the similar comment that the contents were not related closely to the future communication needs.

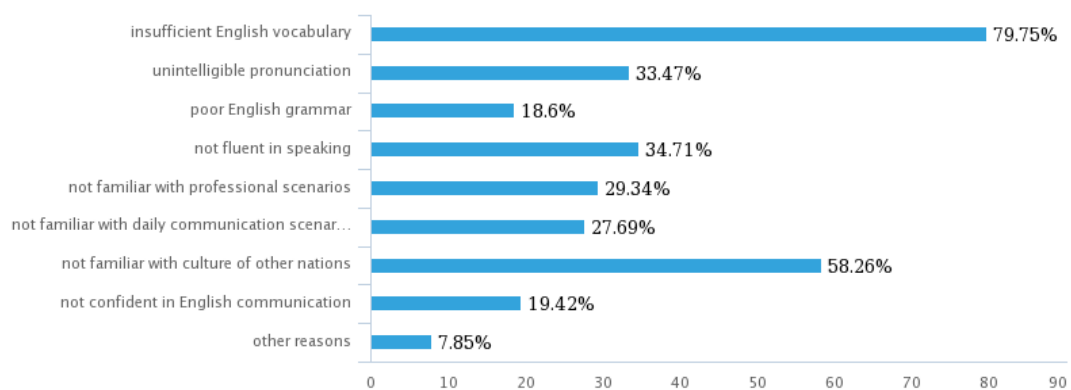
It can also be observed from the figures that the ME teachers are unsatisfied with the result reporting while seafarers do not show their strong opposition to it. Four teacher interviewees stated that the result could not show the real status of the ECC, hence could not be used as references for teaching design.

The effectiveness of the assessment is included in seafarers' evaluation in this part, and the score is lowest of all, which can tell that the validity of the assessment is low from the perspective of test takers. This question is also included in another question of ME teachers' questionnaire, and 5 out of 45 of the respondents think the assessment can assess the candidates' ECC, that means 88.9% of them doubt the validity of the assessment.

To sum up, there is no strong opposition to the format, test question types and numbers included in the assessment, but both stakeholders doubt the validity of the assessment and consider the assessment contents inadequate, and ME teachers are more critical of the result reporting.

5.4.2 Seafarers' major English communication difficulties

To find out Chinese seafarers' English exact communication barriers, two questions are included in Questionnaire 1 and 2. Chinese seafarers are asked to choose what the causes of their difficulty in English communication from their side and the interlocutors' side, and foreign seafarers are asked to choose what are the causes of Chinese seafarers' difficulty in English communication from their side and Chinese seafarers' side. Figure 8 and Figure 9 present the findings.



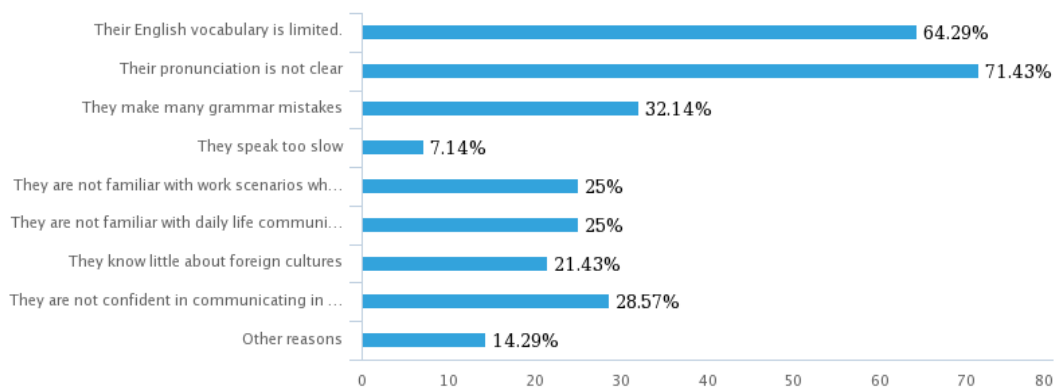


Figure 8 - Chinese seafarers' perception of causes of English communication difficulties from their own side and that from foreign seafarers' view

Source: Questionnaire results downloaded from Wjq

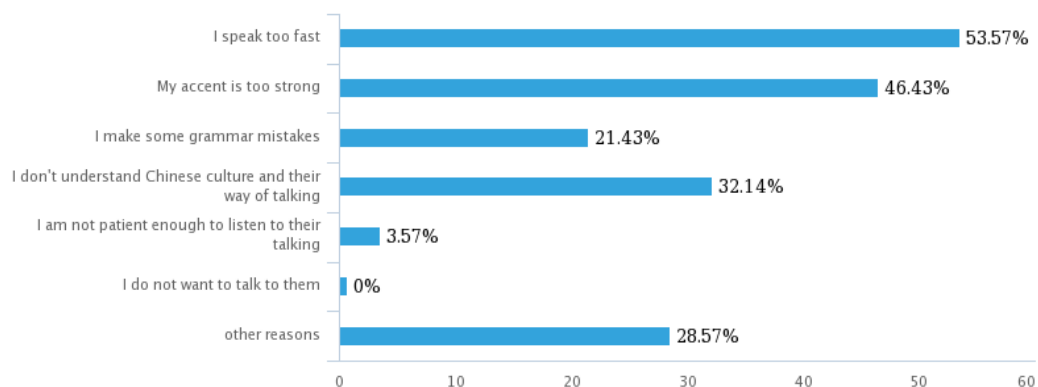
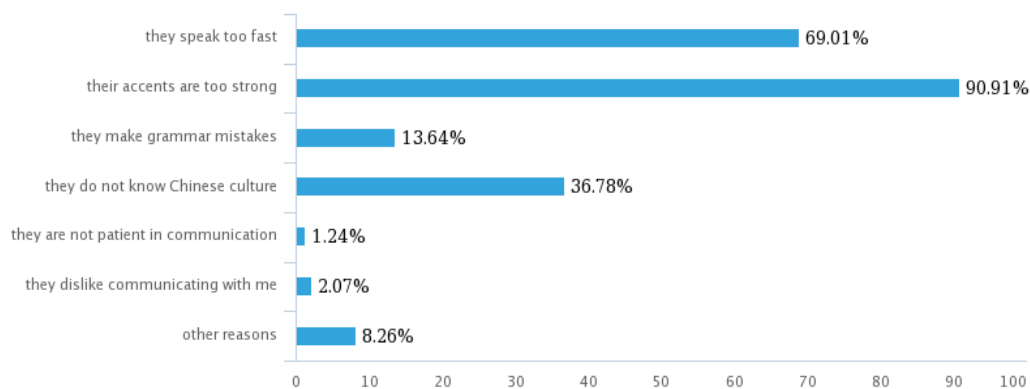


Figure 9 - Chinese Seafarers' perception of causes of English communication difficulties from the interlocutors' side and that from foreign seafarers' view

Source: Questionnaire results downloaded from Wjq

Chinese seafarers and foreign seafarers have different views as to the major communication difficulties for Chinese seafarers. Insufficient vocabulary is the best recognized barrier by both parties, but it ranks first with the Chinese seafarers, while for the foreign seafarers it is second to unintelligible pronunciation. This agrees with the statements of the four Foreign seafarer interviewees who unanimously agree Chinese seafarers do not speak clearly. It also can be clearly observed from Figure 8 that Chinese seafarers are more confident about their grammar, but the foreign counterparts do not consent, as 32.14% of the respondents think grammar mistakes is one of the big barriers to their communication. 58.26% of Chinese seafarers believe lack of culture knowledge is a barrier to their communication, while only 21.4% of the foreign respondents agree that this is a problem. Maybe it's because Chinese culture is the typical oriental culture and is markedly different from the western cultures, and for those seafarers from former western countries' colonies, their feeling of culture shock can be less severe.

In terms of possible causes of communication difficulties from the interlocutor's side, the view of the two parties does not agree either. 90.91% of Chinese seafarers think the strong accent is the barrier, only 46.43% of the foreign counterparts agree so. Both of them think foreign seafarers speak so fast that it is beyond the Chinese seafarers sometimes. Similar percentage of both parties agree that foreign seafarers do not know Chinese culture well, which means there is a need to spread the Chinese culture in the field of shipping.

We can now conclude from the findings that further teaching should stress vocabulary mastery and pronunciation practice, and meanwhile, the culture knowledge should be included in Chinese seafarers' education. In addition, allowing

Chinese seafarers to frequently expose themselves to non-native Englishes to make them familiarized with diverse foreign accents is an important task. On top of that, it's necessary to transport the Chinese culture around the globe, especially to those major seafarer supplying nations. In terms of ME assessment, these Chinese seafarers' communication barriers should be exemplified in the contents so that when they prepare for the assessment, they are likely to overcome some, which will surely do good to the improvement of the ECC.

5.4.3 Suggestions offered

The last question in both questionnaire 1 and 3 asks for suggestions for the ME assessment improvement from the respondents. 25 out of 45 ME teachers and 155 out of 242 seafarers with multilingual work experience offered their suggestions. The summary of the suggestions are made by manually categorizing and encoding with 10 and 30 key words chosen respectively and mapped in the word cloud picture according to the times they are mentioned by respective respondents. Figure 10 and Figure 11 are the word cloud pictures.

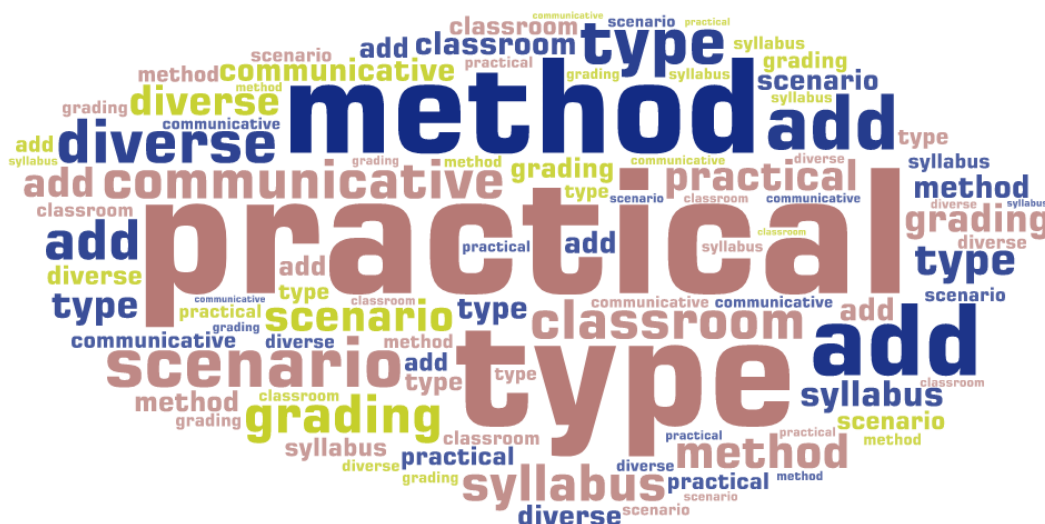


Figure 10 - Word cloud picture summarizing ME teachers' suggestions

Source: Author



Figure 11 - Word cloud picture summarizing ME teachers' suggestions
Source: Author

While the key words elicited from ME teachers' suggestions are more teaching-focused, such as type, method, classroom, syllabus, grading, the key words from the seafarers are more learning-focused, such as practice, training, listening, reading, etc. But it is interesting to note that both ME teachers and seafarer respondents emphasize that the assessment should be practical and close to professional needs and the questions in the assessment should simulate ships' real working scenarios. This is in full compliance with Douglas's LSP assessment principle concept of authenticity and interaction. Seafarers respondents attach more importance to the practice and training to pass the exam, and believe by adding more elements such as daily life, culture diversity to the assessment, they are more likely to get familiar with scenarios on board ships, and can overcome some communication difficulties, but the ME teachers call for more changes to question types and assessment methods. Despite the differences in focus, both groups of respondents show their desire to change the present assessment system and their

suggestions are in compliance with the current language testing theories and some can be traced in the Marlins and ICAO's tests.

All the findings lay a solid foundation for the construction of a new ME assessment.

CHAPTER 6 The prospective ME assessment framework

According to Model course 3.12, assessment is to make sure that sufficient, reliable and verifiable evidence is available to enable the assessor to decide whether the candidate is capable of fulfilling the tasks required in the employment. In terms of ME assessment, the ultimate aim is the assessment of STCW-based language competency, or “effective communication” as is frequently referred to in the STCW code. (Model Course, 3.17). The assessment referred to in this framework is the listening and speaking assessment, just one part of the ME assessment mentioned in the model course, but the concept is also applicable. On the basis of this concept and the theoretical and practical study done in the previous chapters, the author constructs a prospective ME assessment framework as is shown in Table 9.

Table 9 - The Prospective ME assessment framework

Part	Key points
Syllabus design and contents	The IMO instrument requirements (e.g. SMCP) Authenticity of the scenarios (STCW defined duties and responsibilities) Needs of candidates & industry (actual work scenarios) Involvement of more stakeholders
Assessment level structure	Level 1 Operational level Level 2 Management level Level 3 Advanced Management level
Assessment format	Listening and speaking integrated into one. Level 1 computer based Level 2 computer based Level 3 online real person interview
Question structure	Level 1 Part I picture identification and reading and matching 20% (picture of one item or picture of several items in one semantic sense) Part II scenario identification and talking 30% (rank-related jobs, its procedures, and safety measures, or precautions or cautions to be taken, etc.) Part III scenario understanding and response (living scenario & working scenario) 50%

	<p>Level 2</p> <p>Part I scenario identification and talking 30% (rank-related jobs, its procedures, and safety measures, or precautions or cautions to be taken, etc.)</p> <p>Part II scenario understanding and response (living scenario & working scenario) 20%</p> <p>Part III scenario-based communication tasks 50% (such as holding a safety meeting, summarizing a drill, reporting the accident, etc.)</p> <p>Level 3</p> <p>Part I scenario-based communication tasks 30% (such as contacting shore parties, department meeting organization, reporting the accident, etc.)</p> <p>Part II personal interview 70% (use standard format and procedure, topics related to work responsibilities and human management)</p>
Question types	<p>Three factors are considered: identified seafarers' language weak points(such as vocabulary, pronunciation, listening comprehension); function of English for the job,(inquiring, explaining, presenting, organizing, etc.) working scenarios and activities.</p> <p>Question types: objective questions, such as Multiple choices, True or false, matching and open-ended subjective questions.</p>
Assessment standard	<p>Level 1</p> <p>Pronounce and understand sufficient vocabulary covering work-related scenarios (eg. ships' structure, safety/security/navigation/engine equipment, tools, publications, signals etc.)</p> <p>Use proper vocabulary to identify and talk intelligibly about work-related scenarios.</p> <p>Pronounce and use the IMO - SMCP applicable to the working sphere.</p> <p>Use ME effectively in giving and carrying out orders, reporting to senior officers, understanding instructions and accomplishing the communication tasks during watches;</p> <p>Use intelligible GE to effectively communicate with multilingual crew for basis needs.</p> <p>Level 2</p> <p>Pronounce and understand sufficient vocabulary covering work-related scenarios (eg. Ship stability, cargo holds, shipping orders, auxiliary equipment, boilers, etc.)</p> <p>Use proper vocabulary to identify and talk intelligibly about work-related scenarios and give clear instructions to subordinates;</p> <p>Pronounce and use the IMO - SMCP applicable to the working sphere especially in case of taking command in cases of emergency;</p> <p>Use ME effectively in giving orders, reporting, understanding reporting, and accomplishing the communication tasks during watches;</p> <p>Use effectively GE to manage human resources in the responsible department;</p> <p>Level 3</p> <p>Use ME effectively in giving instructions, understanding reporting, and accomplishing the communication tasks relevant to specific responsibilities;</p> <p>Use ME and GE effectively and successfully to communicate with shore parties;</p> <p>Use GE effectively to manage human resources on board;</p>
Grading and	Level 1

report	<p>Automatic report given by the computer, including the accuracy, fluency.</p> <p>Level 2</p> <p>Both computer assessment and assessors will be employed. Assessors' report include the general assessment and comment on some aspects, such as pronunciation, fluency, accuracy, and even suggestions for further study.</p> <p>Level 3</p> <p>Interviewers' report, including general assessment and comment and suggestions for further study.</p>
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Source: Author

This framework is composed of seven parts:

Firstly, in addition to the IMO instrument requirements which is the core of the present assessment system, more factors are taken into account in the process of syllabus and content design, including authenticity of the scenarios, needs of candidates and the needs of the industry. Because the IMO requirements are instructive in nature and it is the flag states' responsibility to establish rules or design tests in line with their domestic status. For example, as has been observed from the previous chapters, the Chinese seafarers' weak points are in pronunciation, vocabulary and listening comprehension, so the assessment will evaluate these points so that the seafarers may pay attention to them in preparation for the assessment as per the washback effect theory in language assessment, hence the weak points can be gradually overcome. Plus, more stakeholders are to be involved in the process of syllabus and content design to make the contents in full conformity with the requirements of the industry. In addition, it's necessary to engage the language assessment researchers to base the assessment on a solid theoretical or linguistic foundations so as to promote its validity and credibility.

Secondly, as per STCW convention, seafarers are divided into 3 levels: support, operational and management levels, and CoC is applicable only to operational and management levels. CMSA divides CoC applicants into three levels: junior officer

level (2nd/3rd officer and 3rd and 4th engineer;), senior officer level (chief officer or 2nd engineer) and master and the chief engineer, out of the consideration that there is big gap between the master and the chief officer or the 2nd engineer and the chief engineer in terms of their respective responsibilities aboard. This framework complies with the level division and has three levels set up so that this assessment is in line with other CoC subjects and its feasibility can be improved.

Thirdly, this assessment integrates the listening and speaking into one assessment, because in language use, listening and speaking is integrated and they can facilitate or inhibit each other. When the aim of the assessment is to check “effective communication”, it is necessary to make communication happen in the tasks with less subjective interference involved. For example, in the present listening assessment, multiple choices are used to test whether the candidates understand what they hear, and three wrong choices are made up to confuse the testees, which can be very subjective and can be partly the cause of its poor validity.

In addition, different formats apply to different levels. On-line or face to face interview is used in Level 3 only. Both ME teachers and the seafarers respondents suggest that human interview should be used in the assessment, but given the large population of the Chinese seafarers, this is almost impractical and not cost-effective either. But this can be used for level 3 candidates, on the one hand, the number of masters and chief engineers are not as big, on the other hand, the communication tasks they need to perform are complex and the interview can evaluate their ECC more comprehensively and efficiently.

Fourthly, different question structures are designed for each level. This is based on the communication requirements for seafarers of different ranks and the assessment

format. In Level 1, there are three parts, each accounting for 20%, 30% and 50% respectively. Part I targets vocabulary and pronunciation, and listening comprehension. By speaking out the pictures and understanding the vocabulary heard, the candidates can show if their vocabulary is sufficient, or the pronunciation is clear, and by matching the picture or word with what they hear, the candidates' listening comprehension can be assessed. Part II tests the ECC in the work scenarios. The candidates need to identify the scenarios either through reading the pictures or words or by listening to dialogues or passages of work scenarios and then talk about it. This can effectively check their ECC in diverse shipboard activities. Part III assesses the communicative ability. In this part, the candidates respond to what they hear and communicate their ideas.

In Level 2, Part II and III of Level 1 are included, but the contents are adjusted to conform with chief officer and chief engineers' respective needs for communication in English. Part III is the simulated scenario-based communication tasks such as holding a safety meeting, summarizing a drill, reporting the accident, etc. When performing these tasks in English, the candidates can show their communicative skills and ability, hence their ECC can be properly assessed.

In Level 3, there are two parts, accounting for 30% and 70% respectively. Part I evaluates candidates' ability to perform required communicative functions in employment, such as contacting shore parties, organizing department meetings, reporting the accident, etc.) A scenario is played (aural or visual) and the candidate will be asked to perform tasks as per his comprehension of the scenario. Part II is an interview using standard format and procedure and the topics are mainly related to work responsibilities and human management. Through the interview, the candidate can present their competence to use English more comprehensively and the

assessment can be more effective.

Fifthly, various question types are used in this assessment as is suggested by ME teachers and seafarer respondents, including objective questions, such as Multiple choices, True or false, matching and open-ended subjective questions. They are assigned to different levels to accommodate the needs to effectively assess the candidates.

Sixthly, a new assessment standard as the minimum ECC requirements for each level is established. It is a comprehensive requirement for candidates' ability to communicate rather than an concrete requirement for each aspect of language. The establishment of the standard is partly based on the yardstick projected by Cole as is shown in Figure 6, partly on the IMO instrument requirements for ECC, in particular, the STCW code and also on other ESP assessment examples investigated. This standard includes both ME use and GE use, and emphasizes the ability to use the language to perform or fulfil certain functions. For example, in Level 1, GE is used to communicate for the basic needs while for level 2 and level 3, human resource management is required.

Finally, a multi-tier grading is used in this assessment. For levels 1, automatic grading with speech recognition software are used, so that the assessment can be cost-effective for the large population of junior seafarers. For levels 2, assessors are invited to grade some parts of open-ended questions and give relatively specific comment and suggestions to the candidate. For levels 3, the Interviewer will grade and offer a brief report regarding general comment and suggestions for further study. This framework is subject to further improvement. The feasibility still deserves testing and discussion. Pilot tests should be constructed and experimented to

investigate its validity. There is a lack of testing criteria delineation, eg. A yard stick or a standard.

CHAPTER 7 Conclusions and Suggestions

7.1 Conclusion

Poor ECC has been a chronic focal problem for Chinese seafarers and previous studies have not investigated in depth the ME test system which has negatively affected the ME teaching and learning. This thesis reviews the significance of studying the ECC for seafarers and analyses systematically the potential causes of the Chinese seafarers' English deficiency. It then examines the test system using LSP and ESP assessment theories, examples and findings of the questionnaire surveys and presents a new ME assessment framework. It's the author's conclusion that building a ME test system aiming at promoting its positive washback effect to facilitate ME teaching and learning can, in the long run, improve Chinese seafarers' ECC and make them dynamic backbone of human resource for sustainable development of the international shipping.

7.2 Suggestions

The true value of the thesis is that it can arouse the attention or the interest of the parties concerned and provide an impetus for forthcoming studies or corresponding changes. Since the CMSA is the competent authority fully responsible for the whole process of the ME test, at the end of the thesis, following suggestions are put forward to it:

1. The concept of ME test should be changed to assess the ability to combine knowledge areas of English language with the diverse language communication skills needed to conduct specific tasks, rather than to test professional knowledge in English.

2. The validity and credibility of the present ME test system should be further investigated by engaging the participation of expertise from shipping factors and linguistic areas especially those from the language assessment area.

3. A clear standard targeting the communicative ability as is exemplified in the framework discussed in Chapter 6 should be established and the test contents and question types should be restructured too.

4. New technology such as voice recognition software, human-computer interaction technology and AI technology should be developed to play the role of the interlocutors or assessor, so that real communication and interaction in English can be achieved in the test, and at the same time, the problem of assessor shortage due to large candidate population can be resolved.

5. The cooperation of the CMSA, the crewing agencies and the MET institutions should be closely established in sharing information, training facilities and even human resources so that concerted efforts can be exerted on building powerful maritime human resources for the globe.

7.3 Limitations

This empirical study presents a comprehensive understanding of the causes of Chinese seafarers' poor ECC and the ME test, however, it is limited by the small number of interviewees who might not be representative. For example, the number of foreign seafarer respondents are limited and they are mainly Philippians and Indians.

The framework presented lacks a comprehensive feasibility testing and further

research is needed to investigate its feasibility and its validity. A pilot assessment should be designed and experimented, and more specific description of criteria is needed.

This thesis also touch little on strategic competence which is rather important for seafarers in the multinational work environment, so further research is needed.

7.4 Digital disruption

In the age of digitization, digital disruption should be considered. As far as the topic of ECC of seafarers is concerned, the human - computer interaction can become common. In that case, it is quite possible that the equipment can be set to interpret the language to the native language of the commander or by shouting out the order in any language, the seafarer can make the the equipment activated or work immediately. Then, will the requirements for seafarers to communicate effectively in English be abolished ?

To some extent, the application of smart devices can make seafarers' ECC redundant, since some operations and communications can be accomplished automatically or the communication can be replaced by pressing the buttons or touching the screen. But there are two concerns from my perspective. Firstly, the reliability of the human-computer interaction is doubted. In case of emergency, it takes human more time to respond rapidly, and there can be a mismatch between human and machine, rendering the operation unsuccessful or even dangerous. Another view of mine is that human interaction can not be totally replaced by computer-based machines, such as robots, especially for seafarers living aboard, because communication is a physical element to maintain human well being.

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APPENDIX: A

Hi, thanks for your joining my survey for my dissertation on improving communicative competence of Chinese seafarers. This is for your brief understanding of the questions to you in my personal interview with you. If you feel like jotting down some information in advance and send it back to me in case you are not available for my interview, I will be extremely pleased.

Survey questions

Part I Personal information

Personal information	
Name	
Nationality	
Profession and organization	
Experience in maritime education or seafarerring or maritime administration	

Part II Questions

Q1: have you encountered English communication failure during your work when English is used? How did you overcome it? What do you think are the main causes of it , language or culture or others or combination of many?

Q2: do you agree that poor communicative competence is critical for seafarers?

Q3: How are potential seafarers tested in English while they are in education institutions or before they work on board in your country according to your knowledge? Could you get me the present English testing sample papers? (written and oral or listening papers, providing information about the format, components, rating) could you get me some information as to how the English exam or tests are updated including the syllabus or questions banks related?

Q4: Have you ever worked with Chinese seafarers? What's your impression of them in terms of communication with others in English? What do you think their advantages and disadvantages are in competitive labor market?

The interview will take about 30 minutes. And the following time will be available to me, please kindly let me know your available time.

May 2 16:00-21:00 May 5 08:30-13:30

May 3 18:00-21:30 May 4 18:00-21:30

APPENDIX B

Interview outline

Interviewee: CMSA officials

A: Present ME test for seafarers: its format, basis, effect and challenges.

B: Future trends and plan to reform.

C: Questions relevant to ME assessment

1. Theoretical basis of the assessment and parties involved
2. Question bank building: people involved, content sources, question evaluation, volume of the question bank
3. Candidates: compositions and percentage, assessment format 参加考试人员情况: 参加考试
Assessor: number, compositions, qualification, standards for assessing questions, work load
4. Assessment result: passing rate, changes over the last 5 years, resit
5. Effect of the assessment and causes.

