

Using SCAT Analysis to Evaluate the Effects of Sailing Vessel Training on Emotional Quotient (EQ) Competencies

YOSHIAKI KUNIEDA*, TAKUO YAMAGISHI† AND KOJI MURAI*

*Tokyo University of Marine Science and Technology (TUMSAT)
School of Marine Technology
2-1-6, Etchujima, Koto-ku, Tokyo, Japan
e-mail: ykunie0@kaiyodai.ac.jp, kmurai0@kaiyodai.ac.jp
<http://www.kaiyodai.ac.jp>

† Japan Agency of Maritime Education and Training for Seafarers (JMETS)
5-57, Kitanakadori, Naka-ku, Yokohama, Japan

Keywords: Sailing vessel training, Emotional quotient, Sailing duty training, Steps for Coding and Theorisation (SCAT)

Abstract. It is thought that sailing vessel training not only improves the knowledge and skills related to vessel operation but also has an effect in the improvement of competency relevant to emotions, such as leadership, teamwork and communications skills. The results of this study indicate that sailing vessel training can effectively improve a person's emotional quotient (EQ) competencies, which include qualities such as leadership and teamwork (2015). Moreover, the results of this study suggest that sailing vessel training is more effective than motorship training in this regard (2016). A questionnaire was developed specifically for instructors and trainees to evaluate the training program elements that influence the training effect of a sailing vessel. Since instructors and trainees generally consider sailing duties as the primary focus of this training, evaluating its relationship to EQ competencies required an evaluation of the instructors' and trainees' perceptions of sailing vessel training. In this study, perceptions of sailing vessel training, especially with respect to sailing duties, were evaluated using Steps for Coding and Theorisation (SCAT) analysis, which is a qualitative data analytical method that uses four-step coding. This paper reports the results of our SCAT analysis.

1 INTRODUCTION

Sailing vessel training has an effect in the acquisition of the knowledge and skills needed for vessel operation. Interestingly, since training and tasks are performed in a team structure, it is thought that sail training has an additional positive effect on Emotional Quotient (EQ) competencies, such as leadership and teamwork. Alison et al. reported that the effect of sailing vessel training improves positive thinking, self-confidence and a person's ability to enhance their own capability.^[1] Moreover, Inomata et al. used a COMPETENCY HIGHLIGHTER EASY AND QUICKLY (CHEQ) exam, which is a simple adoption test developed by EQ Japan. The results of this research effort indicated an improvement in EQ competency after the oversea voyage of a sailing vessel^[2]. In a related study, Kunieda et al.

found clear evidence of the training's positive effect on creativity, based on Torrance Tests of Creative Thinking taken before and after sailing vessel training (2014)^[3]. Subsequently, our previously published research showed that sailing vessel training was effective in the development of a number of EQ competencies (2015)^[4]. Moreover, we found that sailing vessel training was more effective than motorship training in this regard (2016)^[5].

Since instructors and trainees generally consider sailing duties as the primary focus of this training, evaluating its relationship to EQ competencies required an evaluation of the instructors' and trainees' perceptions of sailing vessel training. The aspects of training peculiar to sailing vessels present unique challenges for trainees, including maintenance tasks specific to sailing, such as mast painting and climbing the mast. In this study, the instructors' and trainees' perceptions of sailing vessel training, especially sailing duty, were analysed using Steps for Coding and Theorisation (SCAT) analysis, which is the qualitative data analytical technique that uses four-step coding.

2 INVESTIGATING THE ELEMENTS OF SAILING TRAINING THAT INFLUENCE THE TRAINING EFFECT ONBOARD A SAILING VESSEL

To investigate the training elements that influence the effectiveness of sailing vessel training, a questionnaire was developed and administered to 72 trainees who were near the end of their training aboard the sailing vessel Kaiwo Maru. The same questionnaire was administered to 18 training ship veteran instructors with 10 to 33 years of experience. An example of our tabulation of trainee replies to the following question is provided in Fig. 1.

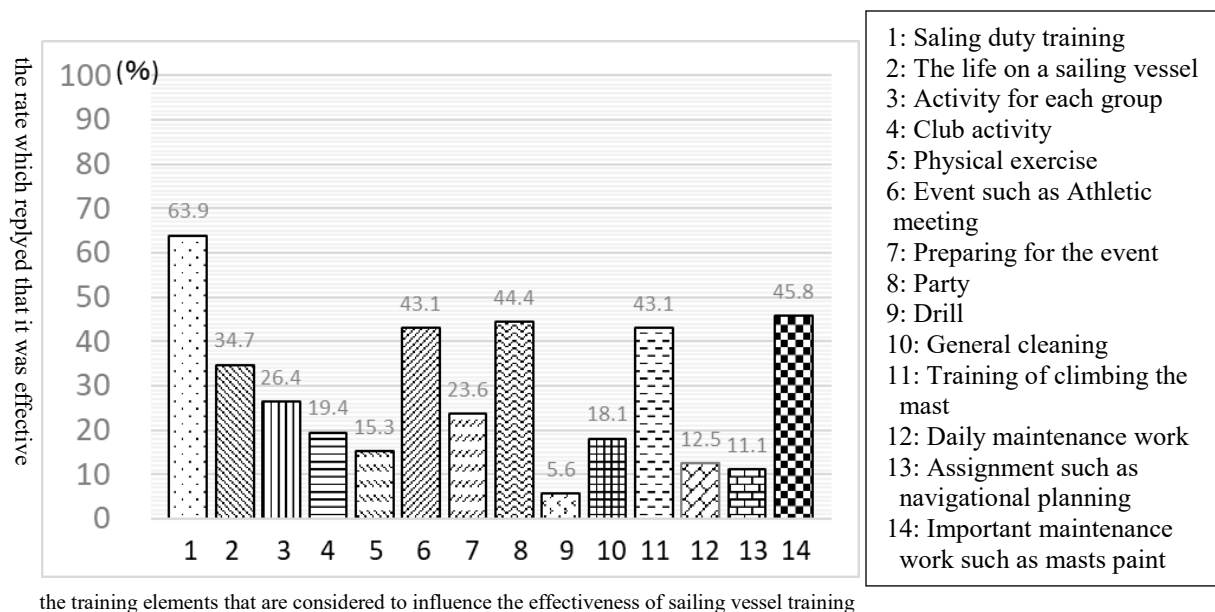


Figure 1: The result of the trainees' replies

Question: ‘Which aspects of sail training do you think have the effect of improving a trainee’s EQ competencies? (Multiple answers allowed)’

According to trainees, the most effective element of training that improved their EQ competencies was “sailing duty training”. “Training of climbing the mast” and “Important maintenance work such as masts paint”, which are peculiar to sailing vessels, were considered effective by the trainees. Although they are not peculiar to sailing vessels, “Events, such as athletic meeting” and “Preparation for the event” were also considered to be effective.

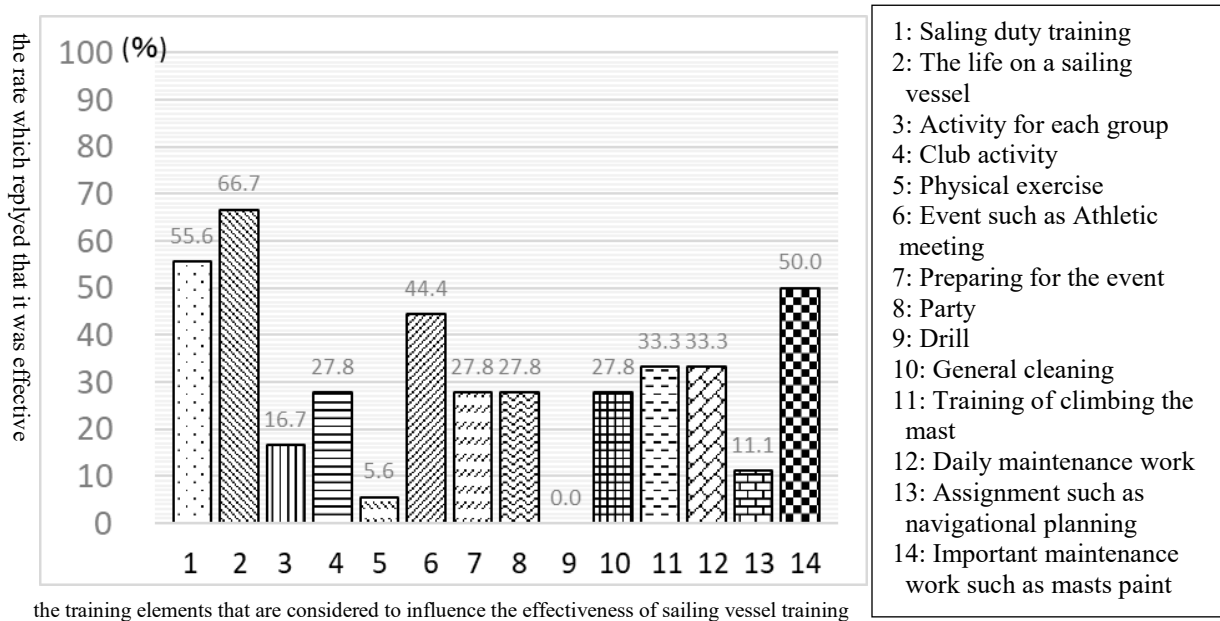


Figure 2: The result of the instructors’ replies

Fig. 2 presents the tabulated responses from the instructors’ questionnaire. Although the results here were similar to those of the trainees, instructors’ responses indicated that they had a greater appreciation for the effect that life on a sailing vessel provides. Event preparation and training of climbing the mast were considered less effective by instructors than by trainees. “Sailing duty training” is training that is only possible aboard a sailing vessel, and since sailing relies on natural wind forces, a stronger connection to nature was apparent from the results. Since sailing duty training is performed by comparatively large numbers of participants, tasks, such as look-out and steering, are important aspects in “Sailing duty training”. In addition, the angle of a sailing ship’s yards is adjusted according to wind force and direction. Moreover, setting sails and “making fast” in sailing are also performed according to changes in wind conditions. These efforts are only successful when the power of a united team is harnessed.

3 QUALITATIVE ANALYSIS BY SCAT (FOUR-STEP CODING AND THEORISATION)

Table 1: Example of qualitative analysis using SCAT
(coding of comments related to “Sailing duty training”)

No.	Text	<1> Noteworthy words or phrases from the text	<2> paraphrased of <1>	<3> concepts from out of the text that account for <2>	<4> themes, constructs in considerations of context	<5> questions & tasks
1	Sailing under canvas pulls together all together, pulls gears, extends sails and begins to sail in response to a wind. Thereby, I realised pulling together and moving the ship rather than sailing under motor.	I realised pulling together and moving the ship	We cooperate and acquire the consciousness as a comrade and get the sense of accomplishment	We need cooperation in the sailing duty training, and we can acquire comrade consciousness and a sense of accomplishment by sailing duty training.	In sailing duty training, we have to do difficult work in cooperation. And a sense of accomplishment can be acquired.	How much is the size of a group? Is there any environmental condition difference?
2	I was impressed very much by the ability to run a ship only by the power of a wind.	I am impressed by sailing a ship by the power of a wind.	I am impressed by natural greatness.	I realise greatness of nature.	I realise power of nature and greatness of nature.	How much is the strength of a wind?
3	Since it must correspond flexibly according to a natural situation, knowledge, correspondence power and decision ability are also needed.	It corresponds to a natural situation, and knowledge, correspondence power and decision ability are required.	Power of nature grows us up.	The best for mastery of knowledge and skill concerning vessel operation and emotional ability by the power of nature.	In sailing duty training, natural greatness is felt and it can become skilled about various capabilities.	Nature changes variously.
4	It was thought that training of the sailing vessel was ultimate teaching materials which can master the knowledge as mariners, i.e. it is the seamanship.	Sailing vessel training is teaching materials which can master the seamanship.	Sailing vessel training is the best for the master of the knowledge about vessel operation, skill and emotional skills.	They are the optimal teaching materials for mastery of emotional skills by sailing vessel training.	Improvement in emotional skills other than knowledge or technology is possible at sailing duty training.	Sailing vessel is good teaching material, nature is the best teacher.
5	All crew pull together, pulled the ropes and set sails, and the sailing vessel moves by everybody's efforts. It does not work without the feeling that every person sympathises with the others of each other.	When all the crew pull together, a sailing vessel sails. It will not work, if there is no feeling of consideration for others in a sailing vessel.	The effect of cooperating is realisable in sailing vessel training. It is ideal for cherishing consideration for others.	The purpose can be achieved by cooperating in sailing duty training. And it becomes improvement in consideration for others.	In sailing duty training, a sense of accomplishment can be acquired by cooperation. Moreover, it also becomes improvement in consideration for others.	
Storyline	In sailing duty training, when nature is used, and a trainee is familiar and feels it as nature, a natural wonder and greatness can be known deeply. The speed of the ship which exceeds engine power only by the power of a wind is obtained, and natural greatness is realised. In order to sail under canvas, you have to do the work which all crew pull together and set sails. All crew have to cooperate in various scenes. A crew cooperates all together, faces nature and achieves the purpose of a voyage using nature. Leadership, teamwork and consideration for others can be cultivated in sailing duty training					
Theory writing	The trainee realised a natural wonder and greatness by carrying out a sailing under canvas. It is the power of moving a huge ship. It is the power in which man does not reach simultaneously. And it is power which man is made to consider deeply. In order to carry out a sailing under canvas, the trainee keenly realised that teamwork and communication were indispensable.					

Given that trainees strongly indicated that “Sailing duty training” was most effective at improving their EQ competencies, qualitative analysis was conducted on trainees’ perceptions of this aspect of their training. Qualitative analysis was conducted using SCAT, which is a qualitative data analytical method that uses four-step coding. This method is a sequential and thematic qualitative analysis technique and is performed by following the procedures listed below in Table 1^[6].

<1> The first step extracts noteworthy words or phrases from the text which are related to the perception of the person responding to the questionnaire. Words connected to a research topic, words of worry or other words and phrases are written out in text form.

<2> The second step is the paraphrasing of extracted words and phrases from <1>. To accomplish this, the researcher generalises the individual phenomenon to which its attention was paid, or the description of a general concept is considered.

<3> The third step represents the perceived concept that accounts for <2>. The concept, the words and phrases and the character string which can explain <2> are developed.

<4> The fourth step is the realisation of themes and constructs that relate back to the context which are drawn from<1>~<3>. Themes and constructs related to a perceived concept are developed by considering the target text in relation to relevant surrounding text.

The questions and tasks that arise during coding are provided in an ancillary fifth step <5>, whereby an additional investigation using references may be conducted.

Thus, storylines are described from the four steps in the coding process, and a theoretical description can be developed. Table 1 presents an example of qualitative analysis using SCAT in relation to trainees’ and instructors’ perceptions of “Sailing duty training”.

4 DISCUSSIONS

“Sailing duty training” begins from setting sails. Usually, all trainees participate, and work is completed under a crew’s instruction. Trainees and crew climb the mast and go over the yards. The gasket is undone, and then, trainees and crew get down on the deck and set sails as ordered by the captain. After setting predetermined sails, the crew and trainees are expected to keep a sharp look-out on deck and with radar. Sail adjustments are made according to wind conditions, and the angle of the yard or boom is also changed. Depending on the situation, work and coordination can become quite difficult and require a high degree of training. In addition to the knowledge and skills in vessel operation acquired from “sailing vessel training”, it is thought that this training influences the improvement of a person’s emotional capability (EQ competencies).

As previously mentioned, both trainees and instructors agreed that sailing vessel training raises EQ competency. Although there was agreement on this subject, it is interesting to note that the trainees' and instructors' perceptions of the value of "life onboard a sailing vessel" were different, with the results suggesting that instructors had a greater appreciation for this aspect of sailing vessel training. Instructors' perceptions on this subject are likely influenced by their longer time involved in the experience. By contrast, trainees were relying on the experience of a single voyage, and their perceptions are better characterised as a "first impression". More specifically, trainees considered certain aspects of the training to be impressive, such as "Sailing duty training", "training of climbing the mast", "events, such as an athletic meet" and "Large-scale maintenance work such as mast painting", whereas instructors with more experience likely perceive these aspects as more of a routine.

As another point of interest, "Training of climbing the mast" is designed to give trainees the skills to climb from a low place on the vessel to a high place, with the top of the mast being the final objective. Inexperienced trainees who routinely climb the mast experience a sense of fear. It follows that, when a trainee conquers this fear and reaches the top of the mast, confidence is acquired, and the trainee can realise personal growth. Practice and repetition are essential to mastering this task, and trainees climbing together encourage each other, which is thought to improve other important EQ competencies, such as teamwork.

"Large-scale maintenance" work is the responsibility of the entire crew and the trainees, and many different forms of cooperation are required. Although a navigational officer draws up a work plan, the work is shared among the trainees and crew. This reinforces the concept of teamwork and collaboration with others. "Events, such as athletic meetings" are included with sailing vessel training to alleviate stress and ensure exposure to "fresh air", which is important on long voyages aboard these vessels because it is indispensable in the maintenance of mental stability.

As the training progresses, trainees are expected to take the lead, draft a plan and manage its implementation. More generally, trainees are taught to think, prepare in cooperation with one another and accomplish objectives by sharing responsibilities. The resulting effect on a person's EQ competency is often quite dramatic.

Using SCAT analysis, meaning and significance, which are latent in the events being analysed, can be developed and described by data. Although many conclusions can be drawn from the data collected and analysed in this study, two prominent theoretical descriptions emerged from our study efforts.

- (1) The trainee realised a sense of natural wonder and greatness by carrying out sailing under canvas. It is the power of moving a huge ship, it is the power that man does not experience in isolation, and it is the power that man feels compelled to consider more deeply.
- (2) In order to carry out sailing under canvas, the trainee keenly realised that teamwork and communication were indispensable to accomplishing goals and realising personal growth.

5 CONCLUSIONS

The results of this study indicated that “sailing duty training” has a tremendous value for both trainees and instructors. The trainees’ perceptions were analysed by SCAT analysis, and the following conclusions regarding “sailing duty training” were made:

- (1) Natural wonder and greatness, including an appreciation of the power of wind, are realised by ‘sailing duty training’.
- (2) Man’s powerlessness is felt during “sailing duty training”.
- (3) There is an effect to which deep thinking is urged in “sailing duty training”.
- (4) Trainees keenly realise the importance of teamwork and communication by “sailing duty training”.
- (5) A sense of fulfilment is realised when fear and challenges are conquered through “sailing duty training”.

Sailing duty training is the most common training conducted about sailing vessels, and many training effects were confirmed in this study. Moreover, even if certain aspects of the training are not peculiar to the training on a sailing vessel, they are extremely valuable, nonetheless. The results of this study suggest that further studies of the relationship between sailing vessel training and EQ will likely lead to important advancements in this important field of study.

REFERENCES

- [1] Dr. Allison, P. and others. The characteristics and value of the sail training experience, Report of a study conducted by the University of Edinburgh on behalf of Sail Training International, June 2007.
- [2] Inomata, K. and others. Study on the advantages of the sailing vessel training-The effect of qualification training on sailing vessel. *The Journal of National Institute for Sea Training*. August 2012, No.88, pp. 1-12.
- [3] Kunieda, Y. and others. Study on the advantages of sailing vessel training - the effect about improvement in creativity. *The Journal of National Institute for Sea Training*. August 2014, No.93, pp. 17-24.
- [4] Kunieda, Y. and others. Study on the training effect of the sail training, *International Association of Maritime Universities 16th Annual General Assembly, Proceedings*, 2015, pp. 167-172.
- [5] Kunieda, Y. and others. Study on the training effect of the sail training, *International Association of Maritime Universities 17th Annual General Assembly, Proceedings*, 2016, pp. 50-55.
- [6] Otani, T. The proposal of the qualitative data analysis technique SCAT by 4 step coding. *Bulletin of the Graduate School of Education and Human Development, Educational School, Nagoya University*, 2008, 54(2), pp. 27-44.