

Enhancing Critical Thinking in Seafarers

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Abstract: Critical thinking is our very own rational-minded, mental processing for decision making. This starts from drawing a valid conclusion from evidence followed by generalizing it after carefully noticing patterns for problem-solving analysis. This thoughtful work concludes with logical based knowledge to make informed decisions. In all professions, critical thinking is the most sought-after skill for employability and becomes more so important for seafarers who work in a small socially compact group and face unpredictable weather at sea. To be able to enhance critical thinking for sailors can be a life-skill at sea. This paper explains two such self-instructional cognitive techniques that can be resourceful for being more prepared during unprepared times at sea.

Index Terms: Critical thinking, foresight, problem-solving behavior, brainstorming, self-control, rational thinking, decision-making, successful performance, maritime occupations, self-efficacy, life-skill, cognitive-behavioral approach.

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Critical thinking is our ability to think clearly to make logical connections between ideas. We show this inborn ability in the form of reflective thinking which is independent of what we hear and see. This "foresight" into our thoughts comes from experiences we have gathered over the years as well as moments of success which help us choose the right way to go forward when looking at the implementation of ideas for problem-solving.

When applying critical thinking to our day-to-day experiences or at work, we tend to look past assumptions and question ideas to understand a problem from a holistic point of view. Critical thinking uses as much instinct as is used for planned problem-solving behavior. In more everyday language, it is a way of thinking about whatever is presently occupying our mind, so that we can come to the best possible conclusion. Someone with critical thinking skills can:

- Understand the links between ideas!
- Understand the importance of discussion and brainstorming ideas!
- Reflective of their assumptions and values and
- Are open to challenging them.

It is a relief to generalize, that we cannot think critically all the time; the reason being self-control. Our emotions cloud our thoughts from feeling angry to grief to joy or stress all in one day which can impair our rational thinking. But the silver lining here is that our critical thinking varies according to our current mindset and thus we can learn to improvise thoughts to create routine activities that can enhance critical thinking skills.

The Hallmark of being human is the fact that we all have preferences in the form of likes, dislikes, experiences, and learned behaviors. The most important criteria to become better at critical thinking is to "be aware" of who we are, assess what are some "unseen impediments" to become a product of "continued success".

Thus, critical thinking becomes that ability to think rationally while engaged in reflecting on our beliefs, detecting cognitive inconsistencies in reasoning, and identifying series of ideas after brainstorming.

This paper will be discussing the concept of critical thinking in one of the most sought-after careers i.e., merchant navy, and how sailors who already display crucial decision-making abilities due to their job requirements, can enhance their critical thinking skillset.

A smooth sea never made a skilled sailor.

Seafarers can spend more than six months on board a ship once leaving port. They are typically exposed to a poor working environment—with high noise levels due to the ship's onboard operations—while having to cope with physiological changes resulting from a three-shift work schedule. Meanwhile, the diverse and rapid changes to the natural environment while at sea make it difficult to maintain physical homeostasis (Jeżewska, et.al 2015).

At sea, a crew may often be a new or temporary team. Officers may have never met before, and there is no time for any team development before starting a voyage. Crew members, who are often from different cultural backgrounds, will probably have different levels of experience, different levels of education, and could have undergone different training. All this can affect social

conduct and communication. Everyone has been in a situation in which they think differently from the group but are unable to voice their opinion. Communication arguably has the biggest impact on group decision making (Chirp,2018).

For crews of naval ships, effective decision-making during stressful situations is essential to the successful performance of their operational missions. Recent mishaps at sea have shown that fatigue, communication deficits, and other factors can have deleterious consequences for decision making during unexpected or emergency events. One strategy for improving safety and readiness at sea involves identifying minimally intrusive methods to increase resilience among crew members, enhance their ability to make optimal decisions effectively during urgent situations, and improve their ability to manage stress during normal operations.

The relevance of enhancing critical thinking for seafarers- Life skills at Sea.

Sailors face numerous episodes of stress and must engage in critical thinking to make cargo operations as well as managing multiculturalism in crew members effective. Unfortunately, accidents at sea have been physical weariness, lack of communication leading to unexpected or tense events. For everyone and specifically for seafarers, being comfortable at work shapes work relations and mental peace which helps to increase productivity.

Onboard cultural clashes occur frequently, because of the multinational workforce. Moreover, because of the reinforcement of the International Convention and the depression in the shipping economy, there is a lack of skilled workers, which only exacerbates job-related stress and fatigue among seafarers responsible for onboard operations, negatively impacting physical and mental health (Allen, 2011, Carter, T. 2016).

Considering the unique nature of maritime occupations, in which seafarers are required to operate efficiently in the ship's socially isolated environment and successfully perform tasks to increase subjective satisfaction, it can be argued that maintaining self-efficacy is essential. Increasing internal job satisfaction and positive self-management by raising seafarers' self-efficacy will enable long-term efficiency in organizing and managing the maritime industry. That is to say, the benefits are not limited to improving an individual's ability to cope with stress and fatigue while raising their subjective satisfaction; they also positively impact the industry (Choi.et.al. 2015).

In the maritime industry, employment of highly qualified human resources/seafarers plays a crucial role to ensure and enhance the safety of the ship. At that point, functional competencies are incredibly important to manage the critical operations on ship in a safe manner. Behavioral competencies like communication skills, teamwork skill, leadership and language ability are other important competencies which contribute to the safety on the ship. Seafarers are expected to be professional with ethical behavior, discipline, and responsibility. At this insight, it is important to focus on functional and behavioral competencies for skill enhancement of a seafarer (Cicek. et.al 2019)

From a cognitive point of view, we are only capable of having in mind around four pieces of information at any given moment, if we consider all the things we attend at sea, it is hard to always think effectively. When at sea, the environment can rapidly change, and sailors can find themselves in unfamiliar and unpredictable situations. Often working alongside other seafarers who do not know each other very well, may have a different culture, and may work differently from each other; also poses a problem.

Do great minds think alike?

No, research explains that we have seven different thinking styles, which we all use and differ in variations given our temperament and personality styles. At sea, crew faces many complex situations, at times ambiguous, and requires constant change. Most people are good at utilizing variety of thinking skills to reach a solution, but others rarely use these which to some extent limits decision making and performance at work.

My thinking styles assessment (Freifeld,2013) explains seven different thinking styles:

Analytical: Organized, planful, methodical (evaluate pros and cons)

Inquisitive: Curious, asks questions, probes deeply (curious to know more)

Insightful: Steadfast, thinks before speaking, perseveres (belief in one's confidence)

Open-Minded: Good listener, respects differences, adaptable (receptive to new ideas)

Systematic: Strategic, connects ideas, sees the big picture (break down into parts)

Timely: Mobilizes resources, multitasks, takes initiative (time management)

Truth-Seeking: Frank, an independent, asks the tough questions (finding out the truth)

All seven styles are positive, and each in its way supports the development of thinking skills. For example, being open-minded makes it easier to learn how to take a broader perspective and not get locked into a view that is narrowly defined by personal biases or faulty assumptions. Being analytical makes it easier to learn how to organize information and notice gaps and inaccuracies. Comfortably accessing different styles creates a well-rounded foundation upon which people can clarify intentions, evaluate information, and make decisions (Freifeld,2013).

As a cognitive- behavioral approach to critical thinking, we would like to discuss easy yet effective techniques that are self-instructional and can be applied both at professional and personal moments of decision making. Making logical and reasoned judgments that are well thought out is at the core of critical thinking.

Ishikawa /Fishbone Diagram- Root cause Analysis

The name of this Japanese technique is called Ishikawa/Fishbone Diagram or root cause analysis. Ishikawa Diagram was introduced by Kaoru Ishikawa, a Japanese scientist. Ishikawa Diagram is an analysis tool to see and find the causes of a problem and contributing to it systematically. The problem or effect is displayed at the head or mouth of the fish. Possible contributing causes are listed on the smaller "bones" under various cause categories (Ishikawa,1985).

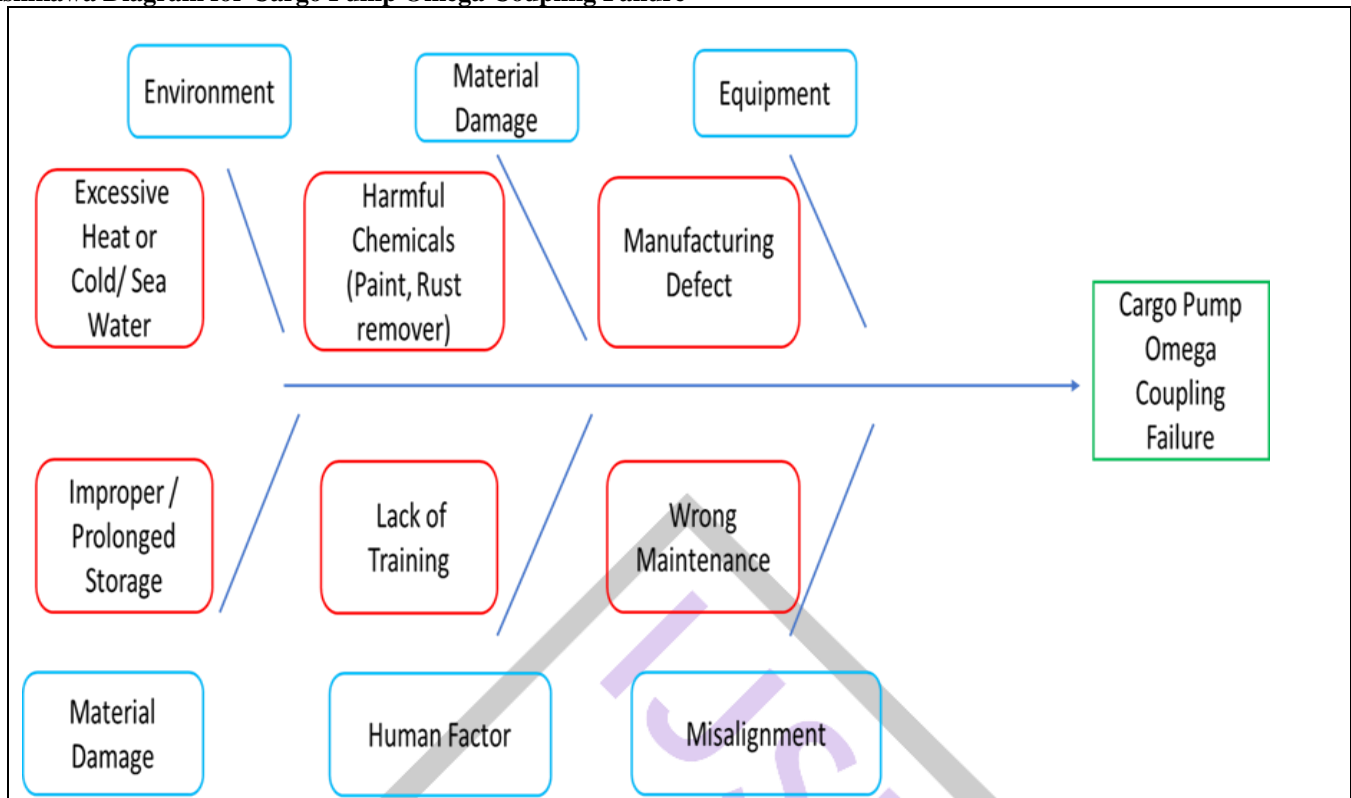
This is a subjective tool to solve problems as it identifies factors causing a problem in a structured way by using a technique focusing on the identification and complexity of the problem. This also facilitates straightforwardness in finding, identifying the root causes, and analyzing which parts have the interrelated problems (Kang et al. 2011).

"Six Honest Serving Men" cognitive journaling for critical thinking

"I keep six honest serving-men, they taught me all I knew. Their names are What and Why and When and How and Where and Who" Rudyard Kipling (1902). Rudyard Kipling was one of the best-loved poets of all time. His work was celebrated for its versatility and passion. Despite being written over 100 years ago, Kipling's short Six Honest Serving Men poem outlines an enormously powerful set of questions that can be applied as a problem analysis tool to many decision-making scenarios. There are several variations of the question's formulations - for example:

1. What is and what is not a problem?
2. When does the problem occur and when does it not?
3. Why does the problem occur and why does it not?
4. Where does the problem occur and where does it not?
5. Who causes the problem and who contributes to its solution?
6. How do we know that the problem occurred and how do we know that it did not occur?

For putting the above two cognitive tools to test, we have tried to bring about a common problem occurrence at sea where critical thinking is required and explained the same in this paper as shown below.

Ishikawa Diagram for Cargo Pump Omega Coupling Failure

Source: Original work of Authors

As shown above, in the diagram, major concern which is cargo pump omega coupling failure is mentioned on the "fish head" and all main causes are explained on the "fishbone". To further break down the problem into smaller interrelated parts, the main causes are micro explained for benefiting responses to how we can manage a crucial problem at work. Critical thinking here would be objectively put things into perspective, literally in black and white, take an overview and dig deeper with the following mental exercise as shown on the next page.

Six Honest Serving Men'' as a critical analysis tool

<p>What is and what is not a problem?</p> <ol style="list-style-type: none"> 1. Occurs when there is a Cargo delay due to Coupling Pump failure 2. Occurs when there is stoppage due to Booster pump Coupling failure. 3. Smooth Cargo discharging operation 4. No cargo breakdowns 	<p>When does the problem occur and when doesn't?</p> <ol style="list-style-type: none"> 1. Occurs when improper care of the coupling has been carried out 2. Occurs when harmful chemicals are applied on the coupling 3. Does not occur when proper maintenance is carried out 4. Does not occur when the Coupling is protected from the elements at sea 	<p>Why does the problem occur and why doesn't?</p> <ol style="list-style-type: none"> 1. Occurs due to lack of appropriate training 2. Occurs due to misalignment of the shaft 3. Does not occur when proper alignment of the shaft is carried out 4. Does not occur when the crew is trained in the proper handling of the coupling
<p>Where does the problem occur and where doesn't?</p> <ol style="list-style-type: none"> 1. Occurs when the coupling is exposed to the elements at sea 2. Occurs when OEM is not purchased 3. Does not occur when the coupling is properly stored when not in use 4. Does not occur when spares are ordered from manufacturer 	<p>Who causes the problem and who contributes to its solution?</p> <ol style="list-style-type: none"> 1. Occurs when there is lack of appropriate training 2. Occurs when incorrect reqn. is raised 3. Does not occur when correct purchasing is carried out 4. Does not occur when regular and correct maintenance is carried out 	<p>How do we know that the problem occurred and how do we know that it did not occur?</p> <ol style="list-style-type: none"> 1. Occurs due to breakage of the coupling 2. Occurs when there is incorrect maintenance is carried out 3. Does not occur when correct handling of the coupling is carried out 4. Does not occur when appropriate maintenance is carried out

Source: Original work by Authors

The above shows how easily a problem can be, if not answered, perceived for analytical decision making. To think critically, ideas must be based on facts and decisions to be made rationally.

The time given to thought is the greatest time saver for all.

We would like to conclude that critical thinking is an ability to engage in rational and reflective thinking of our assumptions and that of problem-solving; to enhance one's decision-making skills. The ability to see the whole picture not only expands our awareness but also our acceptance of the unknown thus assimilating more information. For seafarers, decision making needs to be instinct driven but when their decisions are influenced by clear ideas that have rationality, they are open-minded to brainstorm ideas with others and take decisions based on evidence; in short, while using critical thinking, we believe from overthinkers we can try becoming deep thinkers.

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