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## **Are ships Communities of Practice?**

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**Abstract:** The purpose of this paper is to explore the idea that a merchant ship aligns with the academic notion of a Community of Practice. Through secondary qualitative research, the paper identifies several characteristics which provide compelling evidence. Young seafarers face multiple challenges joining their first ship, not only in terms of mastering the technicalities of their roles but also in terms of social behaviour and interaction. As anyone contemplating the training of school leavers will realise, the people from whom they learn, will inevitably influence their conduct. Learning on the job is not exclusive to the apprentice. Ship staff will endeavour to learn the techniques of the future role they aspire to, by a similar process. Bandura (2001 p1) asserts that human behaviour may be “shaped and controlled automatically and mechanically by environmental stimuli” and this is a theme referenced by Nthia in her excellent 2018 paper relating the techniques of social learning at sea. Compelling evidence of this type of learning was provided and the next logical step is to pose the question *Are ships Communities of Practice?* based on the theories of Lave and Wenger (1991). Conclusions suggest the desire to improve is the one characteristic commonly missing.

**Keywords:** Communities of Practice, Social Learning,

### **Introduction**

The purpose of this paper is to explore the idea that the community of seafarers on a merchant ship aligns with the academic notion of a Community of Practice. Through secondary qualitative research, the paper identifies several characteristics which provide compelling evidence they could be. Young and impressionable seafarers face multiple challenges when joining their first ship, not only in terms of mastering the technicalities of their roles and the operation of equipment but also in terms of social behaviour and interaction. As anyone contemplating the training of school leavers in their late teens will realize, the source of guidance, that is, the people from whom they learn, will inevitably influence the way in which they conduct themselves. Learning on the job is not exclusive to the apprentice. All ship staff other than perhaps the Master and Chief Engineer will endeavour to learn the techniques of the future role they aspire to, by a very similar process. Bandura (2001, p1) asserts that human behaviour may be “shaped and controlled automatically and mechanically by environmental stimuli” and this is a theme referenced by Nthia in her excellent 2018 paper relating the

techniques of social learning at sea. Compelling evidence of this type of learning was provided and the next logical step is to pose the question *Are ships Communities of Practice?* Based on the theories of Lave and Wenger (1991). Such communities bear three essential qualities:

The Domain - the group has an identity defined by a shared domain of interest. Membership therefore implies a commitment to the domain, and therefore a shared competence that distinguishes members from other people.

The Community - the group is active in engaging with each other in order to learn from each other.

The Practice - defined interest and activity alone is not sufficient to gain the attribute, the activities must be self-reflective and focused on improving the efficiency and effectiveness of the practice.

This paper sets these three criteria against the activity and social interaction amongst ships' staff in order to address the question.

### **What is Social Learning and how does it manifest itself aboard ship?**

Social learning is a key proponent in the theory of social learning, which correlates the individual and their environment during the learning process and replicating behaviour. Bandura (2001) points out the environment as a critical element of social learning, and as the stimuli which initiates the learning process. Bandura further alludes that people learn through families, communities within which they live or the media.

Social learning theory provides the link between behaviourist and cognitive learning theories as it includes attention, memory and motivation. Social learning as theorized by Bandura (2001), posits that people learn from one another, via observation, imitation, and modelling. The theory related closely to the proposals made by Vygotsky, (1978) proponent of social development theory and situated learning with the objective of social learning. In constructivism, learning is seen as a dynamic, constructive process. New information is related to previous knowledge. Practical or competency-based professions such as seafaring and medical training have noted practical experience of social learning where students observe trained professionals during the learning process. Moreover, past research in social learning asserts that in order to underpin knowledge in social learning, the learner has a listening and observation role to play (Esye et al., , 2016).

McDonald & Cater-Steel (2016) assert that community of practice members may be physically co-located and how social media can be used to connect members across geographically diverse locations. Their study analyzes higher education communities of practice within the broader community of practice and social learning literature and articulates the importance of community of practice leadership roles such as learning from superiors on-board ships. Their study observes multiple perspectives reflecting on existing CoPs and sharing insights and reflections on implementation strategies, practical guidelines and ideas on how community of practice's theoretical underpinnings can be tailored to different contexts.

According to Powell (2019) compared to traditional formal learning techniques, social learning focuses on how learners interact with peers for just-in-time learning and skill acquisition. He is a proponent of the 70:20; 10 learning framework which suggests that about 70% of someone's learning happens through on-the-job experiences, 20% through interactions with

their peers, and 10% in instructor-led classroom environments. Powell adds that organizations are increasingly adopting social learning to deliver more stimulating learning experiences, for example through e-learning, collaborative learning and its application in the flow of work to drive organizational performance. He leverages social learning with modern technology approaches to learning such as e-learning platforms. Shipping companies have in the recent past embraced technology including allowing internet onboard ships and e-learning endorsed by the IMO (STCW, 1978 as amended). Young seafarers may be effectively engaged in social learning onboard ship by using the technology they are endeared to.

Heyes (2015) discusses social learning strategies and circumstances when it might be suitable to copy behaviour than continue with previously learned behaviour through social learning. The author recommends copying successful individuals, when social learning is costly or when copying the majority. Furthermore, the study considers how social learning may impact talent or knowledge retention. It is noted that learners are social beings with a need to be associated with a group. This is most applicable onboard ship where teamwork is inevitable. Knowledge sharing by teaching, mentoring in social learning gives satisfaction to the disseminator (Powell, 2019). Knowledge sharing in organizations has been noted to improve employee satisfaction, engagement and committed to the company.

Powell (2019) proposes social learning as a tool of retention in employment by helping employees adapt rapidly and be agile in the changing environment and more so onboard ships. It improves professional development, increases employee efficiency and effectiveness, and via relevant training, helps to educate the workforce on security, safety and compliance.

Seafarers' training either onboard ship or on shore cannot ignore the influence of social learning as competency based training involves observation, whereby trainees observe their trainers for example the Bosun or a senior officer. The trainee takes instructions from the mentor or trainer as well as observes how the trainer is carrying out various responsibilities known as observational learning (Bandura, 1977). Observation learning, a facet of social learning, may take place through observing an actual individual, verbal instructional model including description and explanation of behavior or symbolic models such as simulators onboard ships. All the while, social learning is taking place and therefore it can safely be said that ships are communities of practice. In contrast, Sternberg and Williams (2009) note that not all observed behaviors are imitated. Learning may be attained through reinforcement which involves rewarding a particular behavior either directly, another party receiving a reward or self-reinforcement. Cherry (2012) proposes motivation as a trigger for observation learning. Motivation may take the form of reinforcement or punishment.

### **What are Communities of Practice?**

This section describes communities of practice by initially defining the terminologies "community" and "practice" and later discussing the phrase "communities of practice". Communities may be described as members engaging in joint activities to help one another and share information. In doing so, they build relations in order to learn from each other. Having the same job does not necessarily make a community unless members interact and learn together. Members of a community of practice do not necessarily work together on a daily basis but they could be a community if they make deliberate effort to meet and interact. Ships by nature of sailing away from the usual relations of family and friends provide a potential community whereby seafarers meet during watches and after watch at the mess room for recreation facilities.

Practice in the phrase “communities of practice” denotes members of a community who are practitioners. They develop a shared repertoire of resources: experiences, stories, tools, ways of addressing recurring problems that is shared practice. Developing a community of practice takes time and sustained interaction. For example, professionals such as engineers make a concerted effort to collect and document the tricks and lessons they have learned into a knowledge base. In contrast, nurses who meet regularly for lunch in a hospital cafeteria may not realize that their lunch discussions are one of their main sources of knowledge about how to care for patients. The shipboard environment which provides an environment of informal interactions for the crew makes it possible for engagement as a community of practice. It may well be that informal discussions during rest periods between watches provide on unplanned safety lessons and even development of a safety culture onboard ship. Seafarers are in many instances multinational and multicultural and to survive onboard ships during the long durations in isolation, they learn from each other different cultures and may develop and international perception in certain beliefs or cultures previously learned from their home countries.

The concept of communities of practice was proposed by Lave and Wenger (1991) as a model of learning. This concept was initially used as a model of learning during internship whereby the learner or apprentice learns from the trainer or master. Their studies reveal a more complex set of social relationships through which learning takes place during apprenticeship. This led to the coining of the term community of practice making reference to the living curriculum for apprentices. The scholars note that learning in a community is not limited to apprentices or novices but also to senior members. Ship-board environments require continuous learning and updating due to the dynamic nature of the maritime industry (Peter, 2005) as well as changing situations onboard ships due to weather, changing technology or even geographical factors.

Social scientists have used versions of the concept of community of practice for a variety of analytical purposes, but the origin and primary use of the concept has been in learning theory. Anthropologist Jean Lave and Etienne Wenger coined the term while studying apprenticeship as a learning model. People usually think of apprenticeship as a relationship between a student and a master, but studies of apprenticeship reveal a more complex set of social relationships through which learning takes place mostly with journeymen and more advanced apprentices. The term community of practice was coined to refer to the community that acts as a living curriculum for the apprentice. Once the concept was articulated, we started to see these communities everywhere, even when no formal apprenticeship system existed. And of course, learning in a community of practice is not limited to novices.

Wenger and Snyder (2000) communities of practice are different from teams in that teams may be created by the management in a company. Companies may use cross-functional teams or work groups to develop ideas or knowledge. Communities of practice may achieve much more by complementing existing structures and radically stimulate knowledge sharing, learning and change. They are groups of people informally bound together by shared expertise and passion for a joint project. This concept has been utilized by engineers engaged in deep-water drilling, for example. The following is a snap shot of communities of practice, formal work groups, teams and informal networks which are useful in complementary ways and which are applied onboard ships. The snap shot aims at clarifying the concept of communities of practice and its relevance onboard ships. Communities of practice are developed by members with the objective of building and exchanging knowledge. Seafarers at sea require each other’s support and knowledge sharing as no one can claim to have solutions to each situation at sea. They are voluntary and therefore, no one is forced or coerced to join a community of practice and they

are driven by passion, commitment and identification of the groups' expertise. These communities of practice may last for a voyage or as long as the members are working onboard ship together.

### A Snapshot Comparison

Communities of practice, formal work groups, teams, and informal networks are useful in complementary ways. Below is a summary of their characteristics.

	What is the purpose?	Who belongs?	What holds it together?	How long does it last?
Community of Practice	To develop members' capabilities; to build and exchange knowledge	Members who select themselves	Passion. Commitment, and identification, with the group's expertise.	As long as there is interest in maintaining the group
Formal work group	To deliver a product or service	Everyone who reports to the group's manager	Job requirements and common goals	Until the next reorganisation
Project team	To accomplish a specified task	Employees assigned by senior management	The project's milestones and goals	Until the project has been completed
Informal network	To collect and pass on business information	Friends and business acquaintances	Mutual needs	As long as people have a reason to connect

Figure 1: Summary of characteristics

From Wenger & Snyder (2000). *Communities of practice: the organizational frontier*. Harvard Business Review. January-February 2000, pp. 139-145.

### What is the link between Social Learning and Communities of Practice?

A number of academic theories which were initially developed as a result of research into child psychology have since been found to have similar relevance to the process of learning at any level, school, vocational or professional. Vygotsky's Zone of Proximal Development (ZPD), according to Bruner (1984, p93) is a "form of mental sharing. In the case of the growing child, it is made possible by parents and more "expert" peers". Chaiklin details application of Vygotsky's ZPD in professional fields such as, nursing, psychoanalysis, psychotherapy and occupational therapy (Chaiklin, 2003, p40) activities which are by no means exclusively within the domain of child psychology.

The same might be said of Albert Bandura' Social Learning Theory, which was based on the notion that an individual observes, then imitates the behaviour of those around them. These references demonstrate the association between popular theories initially related to child psychology and growth but have since been found to have substantial benefit to research into education and education at almost any stage of adulthood, not merely the formative years as a

child. Whilst Bandura latterly channelled his study into the more disingenuous aspects of the behaviour of children in their formative years such as aggression and bullying, aspects not disassociated with concerns of the behaviour of certain seafarers today, there are several more broad factors observed by Bandura that are worthy of note in a more positive perspective. Nthia (2018, p3) relates in detail how Bandura's theories apply as much to seafarers on cargo ships just as closely as they have to the formative stages of an individual's learning experiences.

In the same light, Vygotsky's ZDP may also be applied, when exploring the means by which junior seafarers gain knowledge, skill and experience during their own formative stages as a seafarer. With reference to Vygotsky, Lave and Wenger (1991) developed their own theory eventually known as Communities of Practice. This gets to the core of the paper. Lave and Wenger re-phrased the basis of ZDP with their own Legitimate Peripheral Participation (LPP) though this is not a direct duplication of ZDP, there is a clear association with the ideas of *peripheral* and *proximal*, both implicating that the proximity of the learner to the experienced or experience itself, will expedite the learning process. Researchers studying child psychology and development recognised how the influence of those surrounding the individual child manifested itself in their behaviour, whether in a positive sense (learning) as noted by Vygotsky for example, or even negative (aggressive or bullying) as noted by Bandura's later studies. The models of LPP and situated learning developed by Lave and Wenger did not explicitly cite child development as an environment in which their model routinely applies; it may be legitimately applied to the learning process taking place in the learning environment of school. Another significant point about how Lave and Wenger's model distinguishes itself from Bandura's earlier work is that situated learning "focuses on learning as a social practice in social settings" (Kirk and Macdonald, 1998, p380).

So as explained in the previous section, Vygotsky's ZDP theory is very much within the social domain on the understanding that the proximal element of the theory involves social interaction. "Vygotsky (1982) reiterates the fact that social interaction with cultural artifacts forms the most important part of a learner's psychological development" (Shabani, Khatib, and Ebadi, 2010, p238). It is significant that the phrase 'psychological development' is employed in this statement, rather than simply 'learning'. The same can be said of the trainee seafarer, they are not on board simply to learn individual tasks by imitating in a Pavlovian manner but to develop a means of assimilating to a culture hitherto alien to them as individuals.

Vygotsky defined the ZPD as "the distance between the actual development level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers" (p. 86) (Chaiklin 2003 p40)

Having linked the theories of Social Learning and ZDP, the next logical step is to illustrate how they both may be associated with the education of seafarers. Citing Chaiklin's citation of Vygotsky's own explanation of his ZDP theory, development takes place under guidance or 'in collaboration with more capable peers'. This arrangement could be said to exist under any training or educational scenario, whether teaching young children to the most experienced top professional or academic and anything in between. The training and education of seafarers would certainly fit into the scenario. As Nthia explains, "Social learning and social pedagogy has proven its efficiency with the application in practical professions, such as nursing, where the student can observe a trained professional in professional/work settings, where they learn nursing and its aspects. Maritime Education and Training involves practical training, just as training in nursing (Nthia, 2018, p2).

This paper is not the first to hypothesise the association between social learning on board ship with Communities of Practice. Wahl and Kongsvik (2018, p394) suggest that the social and cultural context of shipboard work and importantly, the implicit learning therein, creates “a shared repertoire of practices and common ways of problem-solving develop”. The authors of that paper (2018, p393) go on to suggest that task specific teams, for example the bridge team, train together in order to embed an *esprit de corps*. The authors of this paper are more of the opinion, as evidenced, that a new joiner to shipboard life would be as well to learn from each and every shipboard task practicable, to achieve the same ends.

The apparent association between Social Learning and Communities of Practice is not lost on observers. One implication of the mechanism of a Community of Practice is that learning does not depend upon the exclusive effort of the learner but is a social process (Farnsworth, Kleanthous and Wenger-Trayner, 2016, p139). The results of a failure of that social process can be unpalatable, with many casualty investigations identifying a breakdown in the socio-technical as a significant contributory factor (Pyne and Koester, 2005, p196).

### **How will defining ships as Communities of Practice facilitate and expedite learning?**

As detailed earlier, a CoP will only function effectively if each member of the community commits themselves to the cause. Of course, employers make every effort to motivate the ships’ staff to encourage this commitment, whether to safety or efficiency and preferably both. The means to achieving this commitment may be through incentive (reward for negative Lost Time Incidents) or veiled threat (disciplinary action) but the encouragement is present in most commercial companies who practice any duty of care for their sea staff.

Let us re-visit the notion of a Community of Practice as it might apply to a ship and its crew but this time with a view to assessing whether the notion could apply in practical terms. Does the crew of a commercial cargo or passenger liner automatically qualify as a domain in the CoP definition. The criterion for this factor seems to rest on whether the members of the community (that includes every member from each department, officers and ratings) share a common interest. This point is well worth questioning, since casual and false assumptions can be made all too easily. For example, would we naturally assume that seafarers:

Have a mutual interest in the safety of life (their own and fellow crew members)

Have an intrinsic motivation to improve their seamanship skills

Have an interest in being promoted

Have an interest in keeping their job

Have an interest in supporting their families

Approach their work with the intention of applying the minimum effort possible to keep their jobs

Approach their work with the intention of applying the maximum effort possible in order to preserve their own life, the lives of those around them and to climb the promotional ladder

It is plausible that any permutation of these factors could apply and some of these listed are clearly contrary. Studies have shown (Cox, 2018, Acejo, 2013) that it cannot be taken for granted that each seafarer is motivated by the same factors. So here we are at the very first factor and little scrutiny is required to expose possible contradictions even at this stage.



Moving on to the analysis of the second criterion, the community. Can we assume the group is active in engaging with each other in order to learn from each other? Well, a brief reflection on the issues surrounding the domain question addresses that point. If we cannot be led to believe that every crew member concerns themselves with the preservation of their own life, we certainly cannot make the assumption that each would be actively monitoring the compromise of the safety of anyone else on board. We might hope that to be the case but providing evidence of this is less practicable. At this point in the discussion it may be easier to adopt a more cynical attitude yet there is much research to suggest that there are plenty of seafarers who are eager to learn and apply the most professional approach in order to contribute to the best interest of the community, with regard to both safety and commercial efficiency (Saeed 2016, Saeed, Bury, Bonsall, Riah, 2016, Dunham and Lutzhoft, 2015).

If we are questioning whether each crew member is eager to learn from each other, it is not likely to be an issue that can be answered straightforwardly. One counter question might be, learn what from each other? The job, or the path of least resistance, how to perfect a strategy to expend the minimum effort but to keep their employee status? Again, assumptions made by researchers outside the industry may be inclined to think the best of the individuals, in terms of applying professional standards and of course employers implore the crews on their ships to do just that. Yet the shipping industry is still littered with unpalatable statistics, whether they be of incidents, near misses or even inspection observations which illustrate aspired standards are not being achieved. If ships really were communities in the genuine sense of the word, these lapses in professional standards would not occur, or at least occur on a statistically less frequent basis. Regrettably the shipping industry does not mirror the commercial aviation industry, which can apparently go a whole year with only five recorded fatalities, according to the Flight Safety Foundation, in 2017. In the same year the European Maritime Safety Agency recorded over 600 fatalities in the shipping industry globally and that was one of the better, safer years. So, whilst it would not be pertinent to attribute each and every loss to a lack of professional application on the ships incorporated into these statistics, the balance of probabilities suggests many were.

The same could be said of the final criterion, practice. As explained earlier, even if we have the domain and the community, bearing all the necessary characteristics with which we associate professional conduct, a true CoP does not exist unless there is evidence of continuous improvement of practice. Again, this is a phrase employed as a mantra by responsible ship owners to convince customers (charterers) or even to endeavour to attract professional talent to their pool of employees. The Tanker Management Self-Assessment (TMSA) initiative, issued by the Oil Companies International Marine Forum, is an example of a voluntary self-improvement mechanism. Yet any ship owner's management system is principally designed to facilitate continuous improvement. The North of England P&I Club May 2017 Loss Prevention Briefing for members insisted the TMSA initiative "has been shown to succeed" in providing a safer environment for seafarers.

## **Conclusion**

This paper has demonstrated substantial association exists between learning theory and shipboard practice. Formal continuous improvement management systems have received favourable assessment by industry bodies, such as the TMSA. Yet the statistical evidence of continual harm and fatality, cited in this paper, has also demonstrated the aim of reducing accidents has yet to be achieved. In conclusion, the benefits of the application of learning theory such as Lave and Wenger's Communities of Practice will only succeed in practice if each practitioner (seafarer) makes a conscious effort to engage in the practice. The day-to-day work

of both of this papers authors, in Port and Flag State ship inspection and Maritime Education and Training, identifies that not all workers make such effort and the instinct to apply the least effort in order to maintain their employment status still prevails at such a level that the industry is not yet ready to declare that ships are always communities of practice.

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