

Mentoring and the Transfer of Experiential Knowledge in Today's Merchant Fleet

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ABSTRACT: According to various statistics, the number of marine accidents is rising, and recent increases in the cost of P & I insurance cover provides further evidence that the cost of these accidents is also soaring. This paper establishes that a contributory factor to the increase in accidents is that experiential knowledge (knowledge gained from professional, 'on the job' experiences and reflected upon) is not being passed from senior to junior officers onboard many merchant vessels, in the traditional way that it used to be, by mentoring. Following worldwide research throughout the maritime community by questionnaire, and ethnographic research by the author, the paper will show what is considered to be the most significant lack of knowledge and causation of this lack of knowledge. It will offer some practical suggestions that may break down these barriers and re-establish the flow of experiential knowledge in the multi-national, multi-cultural merchant fleet of today.

1 INTRODUCTION

This paper is primarily based on research recently conducted in partnership with the Nautical Institute and Middlesex University in London. The purpose of my research is to show that a contributory factor to the occurrence of marine accidents, is experiential knowledge (knowledge gained from professional 'on the job' experiences and reflected upon) not being transferred from senior to junior officers onboard modern merchant navy vessels by mentoring; to identify the barriers that are preventing this transfer of knowledge, and then to provide practical suggestions that will help re-establish the flow of knowledge.

In addition, it is my aim to engage the maritime community in a conversation about mentoring and the transfer of experiential knowledge, for although one may not agree with what I am saying, the very act of disagreeing is engaging and is raising the conceptual profile.

During this paper I will briefly discuss:

- What is considered the most significant lack of knowledge at sea today
- The causation of this lack of knowledge, and
- What can be done to re-establish the flow of knowledge.

Throughout this paper you will note un-cited quotations. These are taken directly from my research questionnaires and, whilst due to agreed confidentiali-

ality I can't name the responder, I gratefully acknowledge their contribution by engaging in this conversation.

2 DEFINITIONS

In this paper I have used the following definitions:

- 1 **Candidate**—Anyone receiving experiential knowledge by mentoring.
- 2 **Experiential Knowledge**—I have defined this as knowledge gained from professional 'on the job' experiences and reflected upon. This knowledge can come from a wide variety of sources or experiences but, in my opinion, it often has the most impact when it comes from an accident, incident or near miss; however it does need to be reflected upon before it can become experiential learning. I will say more on this further into my presentation.
- 3 **Mentor**—The Oxford English Dictionary describes a Mentor as '*an experienced and trusted adviser*' and sources the origin of the word as '*from the name of Mentor, the adviser of the young Telemachus in Homer's Odyssey*'. In the context of my research I simply define it as the possessor and distributor of experiential knowledge.
- 4 **Mentoring**—'*Mentoring is a form of knowledge transfer based in part on altruism*' Davenport T. & Prusak L. (1998). I like this definition as, for me, it sums up the unselfish act of knowledge transfer that I myself benefited from in my early

days at sea. For the purpose of my research, I have followed this theme and defined mentoring as *'the act of sharing knowledge without a designated reward'*, which definition in itself has caused a certain amount of debate, but I believe it suffices.

- 5 **Reflection** – *'A thoughtful (in the sense of deliberative) consideration of your experiences, which leads you to decide what the experience means to you.'* Institute of Work Based Learning. (2008).

3 STATISTICS & SUPPORTING EVIDENCE

According to DNV *'updated figures for 2007 show that losses from navigational accidents within the shipping industry are continuing to increase.'* Soma T. (2007). In this paper I have not incorporated statistical data to support my findings as, lack of experiential knowledge is not generally cited as a contributory root cause of accidents, and therefore its use requires interpretation of accident reports. Instead, I have concentrated on the supporting evidence gained from my research.

4 MOST SIGNIFICANT LACK OF KNOWLEDGE

'Up to 70% of skill is learnt from experience' Trautman S. (2007). It is this maritime skill pool that I believe is not being passed on in the way it used to, by mentoring. With this in mind, and having determined, by questionnaire that insufficient experiential knowledge transfer is considered to be contributing to accidents and incidents, I went on to find what is considered to be the most significant elements contributing to this lack of professional knowledge in today's Merchant Navy.

I must be honest; when I began this research I expected to see the now common themes of, application of collision regulations, standard of certification training and reliance on electronics, to name a few, to be the most prominent response to the question I posed; *'what, in your experience, is the most significant lack of knowledge, that leads to accidents and incidents?'* These expected responses did occur, but not as a significant number, approximately 53% of my responders cited elements that I have collectively grouped as, lack of 'feel', seamanship, intuition, practical knowledge and experience.

But what are these responses actually referring to? *'Whilst much can be taught at college about 'seafaring' it has to be complemented by practical advice from senior personnel, however for the advice to be understood the recipient needs to have (for want of a better word) a 'feel' for seafaring.'*

In the sense the verb 'to feel' is synonymous with 'to experience,' I believe that these responders are articulating the same lack of experiential knowledge that I am referring to in this paper. Let me give you a few more examples:

- *'Ship's officers have ceased to be trained to think and act independently, make decisions based on their own judgments and be accountable for them*
- *Modern seafarers lack a 'feel' for the sea*
- *Inability to act intuitively, and*
- *The inability of modern officers to use their own senses, such as sight and sound and their brains to make decisions.'*

It is not something tangible, nor is it a subject that can be taught in college, although the concept should be addressed and the candidates encouraged to participate in experiential knowledge transfer. It is, as one of my consultant colleagues so sagely puts it *'those gems of wisdom that are passed on during an operation, and that consolidate theoretical knowledge.'*

5 CAUSATION OF THE LACK OF KNOWLEDGE

My next question then is *'what is the causation of this lack of knowledge?'* This question provided much more balanced results and I list the eight top answers:

- 1 Demands on Masters/Senior Officers time
- 2 Rapid promotion
- 3 Multi national / cultural crews
- 4 Poor training / lack of basic knowledge
- 5 Attitude / lack of interest
- 6 Employing anyone who has a ticket
- 7 Inexperience, and
- 8 No formal system of training for Senior Officers.

It is the first four responses I want to concentrate on, as they represent approximately 54% of the responses to this question and again, I believe they indicate inadequate experiential knowledge transfer. Taking each in turn, I will discuss how I believe each causation is affecting the transfer of experiential knowledge:

5.1 *Demands on Masters / Senior Officers time*

'Officers are struggling to keep their heads over the growing responsibilities and additional paperwork that has come about due to the additional requirements that have come about in the last decade.'

'Machines have many qualities but common sense isn't one of them. And common sense is lacking in too many seafarers today. The Master has a vital supervisory role of support of the OOW and this role

is being neglected by the demands of the "office" on the Master's time.'

I think we can all agree that the Senior Officers onboard today's ships are far busier than they were in say the '80's when I was deep sea. I am at times both shocked and dejected to see the changes that have occurred to the merchant fleet, or more specifically to the mariners onboard today's ships, as they struggle to comply with the everyday requirements of running a modern merchant vessel.

'Lack of time onboard due to fatigue of Officers.' Much has been written about the effects of fatigue including some very good papers - *'Seafarer Fatigue – The Cardiff Research Programme.'* Smith A. et al (2006). There is little doubt that fatigue is a primary cause of accidents but consider for a moment the effect it is having on mentoring; how many of us due to work commitments have time as fathers for our own children? At times during a voyage we are often so tired that we can barely stand up, let alone take time out to show the third mate again how to do a relatively simple operation. Do it yourself, do it properly, there is always tomorrow to show her again. But that opportunity for knowledge transfer has passed and may not be re-created prior to the incident!

'Masters, Officers are so busy with paperwork that they have no time to observe the crew during their work. If I spend the day on deck when am I going to complete my other jobs, when am I going to sleep and what about STCW?'

This is an interesting comment, although I know that this responder was referring more to hours of rest than when was he going to find the time to be a mentor. So what about STCW and the transfer of experiential knowledge - are there any provisions for the inclusion of this concept? I cannot find any reference that specifically looks at the knowledge sharing that I am referring to - but that does not come as a surprise - however, much is said about training and the minimum standards required for certification. Keep this in mind, as I will mention more about a structured training scheme further into this paper.

5.2 Rapid promotion:

I have looked at the new foundation degree offered by the UK for training of candidates for their first OOW Certificate and it looks very familiar. It is a three year, five phase course, very similar to the one I embarked on in 1980 although I achieved an HND and now the new officer will achieve an honors degree, in keeping with many of the other maritime training establishments around the world. Further, the UK Maritime Coastguard Agency (MCA) reminds us; *'Master and Officers need to know that the standards expected of the candidate (when com-*

petence is reached) is that of a person about to take up the job for which the award is made. Cadets are expected at the end of their training to be competent to start to undertake the job of watchkeeping officer, but they will clearly be lacking in experience.' MCA (2008). Nothing has changed there! So what is the problem that so many at sea today are referring to? Let us look at a few of the comments I received:

'The manning agents get one or two good reports about someone's performance, and they are fast tracked for promotion – often beyond their capabilities. On the reverse side, I have seen some junior officers demanding promotion after one or two contracts in a particular rank – or threatening to leave – regardless of whether the senior officers believe they are suitable.'

'Lack of time in the long term meaning of the word. Promotions are happening very quickly, people do not have time to experience their knowledge and are being moved one rung up the career ladder.' This is an interesting conceptualization of the learning process where people are not in a rank long enough to *'experience their knowledge'* or perhaps to expand their knowledge base sufficiently with experiential learning to move on to the next rank.

'Many officers today are promoted quickly and as a consequence, lack the foundation of a proper knowledge base.'

'The lack of skilled seafarers has also resulted in a need to employ people who would previously have not been considered as being suitably experienced for a particular rank.'

In answer to this question the respondents who referred to rapid promotion spoke of promotion between ranks and not the length of time that it takes a seafarer to achieve his/her first watchkeeping qualification. Therefore I believe we can assume that initial training is still adequate and that there is further evidence that it is the experiential knowledge traditionally gained between ranks that is missing.

5.3 Multi national / cultural crews

This is always a difficult subject to approach and articulate but I believe that it does affect the transfer of experiential knowledge and therefore must be addressed in an ethical manner, supportive of the current regime.

'Much can be traced back to the huge changes that took place in the industry in the early 1980's. Initially the ship owners continued to employ senior officers from traditional maritime nations but employed cheaper junior officers and crew. This resulted in an almost complete break in the flow of knowledge to seafarers who they believed would take their jobs'. This responder goes on to comment

'as things have progressed and the number of experienced officers and crew has diminished, there has been a tendency for crewing agencies to hire a crew of many different nationalities. On individual ships this has sometimes resulted in an almost complete breakdown in the inter-personnel communication.'

In some ways I am glad to say that the 80's are now well behind us and, in most cases, we have moved on from the attitude described above. I spend a significant amount of my time onboard merchant vessels crewed by a staff of mixed nationalities and, with respect to the difficulties sometimes observed, believe that the problems actually lie far more with a language barrier than with a cultural barrier. As I have undertaken this ethnographic style of research I have also noted that the problems seem to be far more prevalent on vessels with two nationalities rather than those with many. This is, in my opinion, due to the necessity to communicate in a common language on a multi-national crewed ship, whereas with those of just two different nationalities, there is a tendency for each nationality to communicate in their mother tongue and to only converse between the two in a common language when necessary, in essence, de-voiding the vessel of any social communication between the nationalities.

Consider for a moment how much experiential knowledge can be gained by just listening to people talking about a problem, if they are talking in a language you understand, and conversely, how much is lost if they are not.

5.4 Poor training / lack of basic knowledge

'Lack of time for informal training – Undermanned ships and over worked staff prevents mentors to take time off their busy schedule and take personal interest in training of juniors.'

From the previous quotes discussed earlier it does not appear to be the initial college training that respondents are referring to, but the training that they receive onboard ships. This, I believe, further evidences the need for all of us to have this conversation and to determine how we are going to share experiential knowledge again.

6 SHARING OF EXPERIENTIAL KNOWLEDGE

So what can we do? How can experiential knowledge be shared in today's merchant fleets? The first thing is to acknowledge that there is a problem and then to ask who is affected? Amongst others, I believe this list would include seafarers, ship owners, managers and charterers, ports and coastal states, flag administrations, underwriters and environmentalists, although not necessarily in that order

of precedence. If we are all affected by the problem we should all be involved in searching for a solution.

Time and brevity permit me to only give a few examples of the way we can re-start the flow of information. I would caution that none of these suggestions must be allowed to increase the seafarers' workload. They must be incorporated within the current daily operations as cultural and procedural changes or developments, introduced ethically and quietly at every organisational level.

6.1 The 10 minute challenge-

This is something I would like everyone to undertake who believe they may be affected by the problem. Sit quietly for just 10 minutes and reflect on what your greatest concerns are regarding lack of knowledge. For myself as a shipmaster, it would start with if any one is looking out of the bridge window, or is there total reliance on technology to keep a look out. Having determined your greatest concern(s), do something about it. In my example, I would talk to my OOW's anecdotally, with examples of clear weather collisions that have happened recently on modern ships and hence why it was important to keep a visual lookout.

I often wonder how many masters who have concerns regarding compliance with their standing orders have taken the time to actually explain to their junior officers the relevance of these instructions and the potential consequences of non-compliance, for both parties. Or is a signature of understanding sufficient because there is no time for more, or perhaps a fear that it could invoke a response? 10 minutes is all it would take.

6.2 On the job opportunity-

'To gain the maximum amount of synergy from on-the-job experience, cognitive apprenticeships or a transformational learning event requires teacher/facilitator support. Mentoring, guiding, debriefing or teaching is required to maximize the learning opportunities'. Gray I.S. (2007). To achieve this gain I believe we need an adaptive, structured approach to mentoring. Most established shipping companies had a formal system in place ten or twenty years ago and in my early career it was expected that I would understudy the next rank above. This structured system should permeate through all onboard activities and should be utilized through all stages including:

- 1 Preparation—This could be as large as a Job Safety Analysis (JSA), perhaps a 'toolbox' talk or quite simply just the master, mate or chief engineer taking a couple of minutes to explain what is expected to happen.

- 2 Execution-While the job or task is underway the mentor should try and point out important / interesting moments and facts and explain them to candidates or better still, let them undertake the task under supervision.
- 3 De-briefing - After the job or task has been completed, time should be allowed for questions, comments or opinion.

One can imagine the difference this might make to a keen young officer on the bridge who is used to staying in the chart room plotting positions by GPS, when approaching a port or anchorage and is allowed to con the vessel under supervision through the above tasked stages. Even now, I still remember the pride I felt when as third mate; I was allowed, under the master's supervision, to keep the con of a large roro/container vessel as we transited a busy Dover Strait.

I believe that everyone should be routinely training his or her successor. Even on small tasks not requiring formal preparation, every opportunity should be taken to pass on experiential knowledge. If this ethos is followed it should soon become embedded within the culture of the vessel with a resultant improvement in operational standards.

6.3 External learning facility-

With access to the internet now available to ships it is possible for companies to build a website that gives the mariner real time information on a variety of subjects perhaps relating to vessels within the company, ports visited, cargos carried etc. This is a good way of sharing information within the company and of transferring experiential knowledge remotely. Some companies have taken this further and employ knowledge brokers to facilitate this, but it does not need to be that elaborate. I know of one company that used to have a radio conference call with all their vessels each morning; what a great way of transferring experiential knowledge informally.

This concept could also be developed at institution level with access to online mentors. I know from my research that there are many professional, experienced people willing to share their knowledge if we can just facilitate the transfer.

'Onboard a more structured approach may be necessary – juniors setting down their questions, comments and areas of bewilderment at the actions taken, in an electronic format which could then either be passed on to the senior officers on board or to specific mentors elsewhere. The second option provides some anonymity for the questioner but the first option could/should elicit a response from the senior officer involved in the situation in question.' I have recently seen a similar concept in place for safety issues. When a potentially unsafe act or oc-

currence takes place it is dealt with immediately and then a card is filled in detailing the instance. This card is reviewed at the next daily management meeting and any required action taken. The card becomes part of a closed loop system ensuring feedback. Perhaps this style of approach could be used to gain experiential knowledge from an action, when 'the heat of the moment' has passed.

6.4 Distribution of accident investigations-

I think that it is safe to say that we all like to read a good accident report. I know that when 'Seaways' arrives each month the MARS reports are usually where I start reading and, as I said right at the beginning of this paper (*experiential*) *knowledge can come from a wide variety of sources or experiences but, in my opinion, it often has the most impact when it comes from an accident, incident or near miss; however it does need to be reflected upon before it can become experiential learning.* Many countries produce excellent reports but how many of them actually get to ships where they can be read and reflected upon by the seafarers? One suggestion, which came from one of my consultant colleagues, is to include a newsletter with lessons learned from incidents and accidents in the weekly Notice to Mariners that is sent to every vessel. Not only would the seafarers be able to read this but also it would provide an excellent source of discussion between mentors and candidates. Just recently, IMO has adopted the code to make marine accident investigations by Flag/Coastal States mandatory and these reports will be made available to the industry, so this is an ideal opportunity to ensure that they reach as wide a readership as possible.

In this context, thought must also be given to producing these reports in different languages as I believe so much value is lost if they are only in English. What use is an accident report highlighting the dangers of (say) operating a winch if the winch operator only speaks Chinese? Here, I believe P & I Clubs could play a significant role and mutually benefit, by helping to ensure that the experiential knowledge is transferred to their member's staff in a language they can understand.

6.5 Structured training scheme-

From my research to date I can find little indication that officers gaining their first certificate of competency are any less trained or experienced than they used to be, in fact in some fields such as the use of electronics they are very often experts! It is the next step that is causing concern as the officer progresses through the ranks. For those seafarers aspiring to, or recently having taken up command, The Nautical Institute Command Diploma Scheme provides an open

learning scheme based on the publication *'The Nautical Institute on Command'* with the diploma awarded to those who successfully complete *inter alia* all the relevant tasks in a log book. But what about those officers who are between their first and last certificate, what is there for them to ensure they are gaining sufficient knowledge?

There are schemes available for this and I am aware of at least two companies that incorporate them into their training and career development programmes but, in my experience, this is not common. I recommend that we develop and adopt a universal, formalized system of continuous professional development through the ranks - possibly by extending the "Cadet Record Book" system - this is a task book system - all the way up to chief officer / 2nd engineer where it should meet up with the NI scheme. The successful completion of the training programme would then become pre-requisite to the promotion of the officer.

6.6 Increase in staff-

We have already determined that fatigue is a serious issue onboard of merchant vessels and an undisputed cause of accidents and incidents. I am also a realist and realize that most ship owners will not increase the staffing levels onboard ships unless forced to by legislation. I would urge the responsible administrations to re-visit the issue of safe manning certificates in the context of not only operating the ship safely but also ensuring that the operators' workload is manageable, leaving sufficient time for other activities such as mentoring. Consider for a moment the number of ships in your region that have just two watch keeping officers, what chance is there for one to understudy the other when they are working 6 on and (theoretically) 6 off?

In this context I am pleased to report that some ship owners have considered this and provided an extra officer onboard their vessels to assist with the workload. On one tanker I was aboard recently the master had a young, newly qualified third mate to act as his secretary. This officer was also able to relieve another officer as necessary on the bridge or on deck. The system worked admirably and what wonderful experiential knowledge that young officer was gaining in preparation for when he became Master.

Another suggestion comes from Rik F. van Hemmen in his paper *'The Need for Additional Human Factors Considerations in Ship Operations'* where he suggests that an additional officer be carried as an environmental officer. This additional seafarer would be a chief officer or second engineer nearing promotion and he / she would deal with all the environmental requirements of the vessel whilst understudying the master or chief engineer. I believe

that this position would also lend itself well to the concept of mentoring and the transfer of experiential knowledge.

7 CONCLUSIONS

'The fundamentals of seafaring (for deck officers in particular) have not changed over time. To put it simply - to get from A to B without hitting anything, running aground or sinking! For various reasons it appears that many do not understand the basics now at sea and that this lack of understanding is not caused only by a lack of training.'

There is no doubt in my mind that the loss of the transfer of experiential knowledge by mentoring is a problem within today's merchant fleet. My research provides evidence, but I have also seen it with my own eyes, particularly over the last ten years, as a pilot and now as a marine consultant. It is not a 'headline' problem like fatigue and to the best of my knowledge has yet to be cited during a root cause analysis. But it exists and it needs to be addressed.

Is it too late? It certainly is a challenge, especially when it is the most senior officers that lack the experiential knowledge. But on the plus side it is a problem that can be solved, where anyone can instigate change, what ever their position. I respectfully challenge everyone to engage in this conversation, to reflect on the vast amount of knowledge that you have and to take a few minutes out of your busy schedules to pass a piece of it on. It does not have to be much, but it may just be that *'gem of wisdom'* that makes the difference in somebody's life.

Consider also the experiences that you have had in your life to date, some are good and some are bad, but the knowledge that comes from those experiences can only ever be good. I personally believe that, as masters of our various trades, we have a traditional duty to pass on our knowledge through mentoring (or whatever you want to call it) and to put something back into our community of practice that has given us so much.

For, whilst this is but *'a drop in the ocean - oceans are made of drops.'*

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