Can the simulator replace on board training?

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Introduction

In maritime industry a general difference of opinion subsists in discrimination of Education and Training. A review of STCW Code reveals the fact that in many instances it seems to be completely ignored by experts and decision makers. There used to be a clear distinction between education and training in the industry but after any major review of the code the distinction faded away a little. The educational materials in maritime colleges and the apprenticeship on board were well defined, there had been a clear line in between, and today this line is not as colourful as it used to be.

Training and Education follow different goals, these are recognizable. It should be remembered that training is a closed system. The trained person knows the correct answers; he/she does things in a predetermined path and reaches to the same results which are expected. Therefore different trainees normally reach to similar results. There are very good examples such as operation of a RADAR set or handling cargo gears. On the contrary education is an open system. For education there is no limit, it all depends on the preparedness of the graduate to tackle the new responsibilities. A very good example is the preparation of cargo plan, loading 100 different commodities in 5 holds in 5 different loading ports for discharging in 5 different discharging ports or the application of collision regulations at sea.

The introduction of simulator in the industry has reduced the value of apprenticeship on board. The unfounded perception that simulator can replace the apprenticeship is misleading. The need to simulator or the replacement of part of apprenticeship on board with simulator courses was first introduced with a decline of ships designed and constructed to carry cadets. The apprenticeship on board cadet ships was costly and human capital was considered as expenditure and not as assets that will produce profits in shipping companies' balance sheets. Without hesitation on board training expenditures is a unique form of business expense.

This paper tries to evaluate the replacement of "On Board Training" with "Simulator Courses", In other words can "Simulator" replace "On Board Training"?

In order to answer this question the project has taken the following steps:

- Distinguish between training and education in general
- Distinguish between "On Board Training" and "Simulator Training" in maritime domain and eventually;
- Discussion

Training and Education:

According to WIKIPEDIA **training** means *acquiring knowledge, skills and competencies as a consequence of teaching some specific vocational or practical skills. It is the heart of apprenticeships and it is the foundation and basis of vocational colleges and polytechnics.*

According to the human resource market observers, *in many trades in addition to the initial qualifications there is a strong need to continue training beyond this level. This is referred to as professional development.*

Training looks at students as a tool and not as an end product. If some one has been trained it means he/she is prepared to do something to make more profit for the employers. A trained person under a certain given conditions will exhibit a predetermined behavior. With training level of learning is limited to the job demands. Here time can not be defined; it depends on the capability, experience and previous skill level of the student. Teaching materials can be verified by a task analyses carried out by experts in the field. A list of every piece of activities done by the student in his future job satisfies the requirement.

Education on the other hand is more concentrating on the mental process of learning. It focuses on cognitive domain. Education is high comprehension and above. Here the student is the end result. If someone is educating himself it is his personal development. For educated persons there are no right answers but better or worse exist. With education there is no cap or ceiling. Contrary to the training time is well defined for education; it is normally a predetermined number of years or months etc….

Teaching materials are not exactly known, it is normally a sample out of a universe of ideas. The student must learn how to visualize different situations and decide the best action in time. According to a study; one way to establish if a subject is in training rather than in education is to check whether its title includes the suffix "ing". The best examples are Marketing, Accounting and Advertising. Following a similar rule one can easily recognize good examples for education; these are History, Literature and Philosophy. This "ing" rule works normally well. Ship handling and Maneuvering follow "ing" rule for training and Meteorology, Commercial knowledge and many other subjects are good examples for education.

The differences between training and education do not indicate that one is more important than the other. They only suggest that they are different, and they should be seen as two different aspects of learning process. A person can not command a ship efficiently without a wide range of knowledge, skills and competencies. Failing to distinguish between training and education leads to improper learning and improper learning adversely affects performance.

On Board Training:

Sea cadets spend part of their cadetship as apprentice on board. (STCW, Chapter II Regulation II/1) During this period they are assigned to carry out a variety of duties and tasks under the supervision of a training officer. These tasks mainly include seamanship. Seamanship can be described as the art of operating a ship. In fact during this time cadets use the knowledge they have acquired at the universities or nautical colleges in their real future working environment. The main attraction of on board training is that cadets do what they will have to do independently in the future as an officer under supervision. They actually experience long working hours, hard work, noise, extreme temperatures, odd working hours and many other practical aspects of the job. Dealing with visitors in port such as port state control officers, surveyors, suppliers, workshop technicians and pilots is only a small part of what they actually see as an apprentice. "On Board Training" can show an apprentice how

difficult and complicated a simple task may turn to in different parts of the world especially when there is an interface with port.

A substantial amount of time is spent on jobs being normally done by the ratings on board ships. This helps the cadets to learn and understand other aspects of the sea carrier. In reality on board apprenticeship is a combination of technical and social training. The personal experience of the author indicates that on board training and apprenticeship is the most attractive and challenging part of the carrier. The first part of "at sea training" is determinant. Those who have fanciful imaginations from the job will recognize how wrong one can be. This is something that can not be achieved anywhere else.

There are certain advantages in "On Board Training":

- It increases productivity, quality and effectiveness
- Learning is immediate
- Performance assessment can be done
- Ensures job competency
- Improves work relationships

And the most important advantage is "On Board Training" is real time. The learner is learning in the real environment.
However building ship capable of carrying cadets is costly.

"On Board Training" cannot be legitimized with indeterminate promises of "It will be good for the company." In today's economic responsive environment, shipping companies training departments have to prevail upon their managing directors that "On Board Training" expenditures will transform into real results. The decision-makers want and need to know: Will the achievements brought by "On Board Training" outweigh their costs and by how much? Can there be a substitute for "On Board Training"?
The Simulators come to the scene.

Simulator Training:

According to WIKIPEDIA **Simulation** means *the imitation of some real thing, state of affairs, or process. The act of simulating something generally entails representing certain key characteristics or behaviors of a selected physical or abstract system.* Simulators are used in many different areas. The use of simulators in training has become more widespread every day and maritime sector is no exception. There are many reasons for using simulators in MET but there are some disadvantages which should be discussed before deciding to replace part or whole of "On Board Training" by "Simulators".

Many experts believe that the best way of learning something is by practically doing it. We can learn by listening to someone or by watching someone doing it but these are much less effective than doing it ourselves. Simulators in fact provide the possibility for the learners to do something in a virtual world. In maritime field there are very good examples such as Bridge simulators, Engine simulators and Cargo simulators. These simulators give the

learners the opportunity to do something that is very expensive, dangerous and delicate in real environment. A sensible example is maneuvering a VLCC in restricted visibility in British channel by inexperienced officers.

Lecturers are well aware that learners are easily distracted during normal class room sessions; this does not normally happen in simulator courses provided that the lecturers develop new challenges and keep the learners actively involved in solving problems.

The biggest disadvantage of "Simulator Training" is the fact that it is a **Simulation**. Unfortunately the personal experience of the author indicates that many learners consider simulators as computer games and a great majority of learners including Mates and Masters enjoy grounding a VLCC in British channel rather than navigating it safely through.

The author has come across many bridge simulator course participants who navigate a large container ship at 25 knots in a narrow channel in restricted visibility.

Simulators make things easier and less time consuming than the real world; consider berthing operation in hot humid climate. I have never heard or seen such an environment in the simulator courses, on the other hand simulator courses are normally done in optimum air conditioning environment which is normally required for the equipments.

Discussion:

Perhaps the main issue of producing good officers has been neglected here. Do simulators really produce officers in every aspect? Can we teach discipline by simulator courses? Can we create modesty in our young officers? Are we able to enrich self esteem? And in general can simulators create officer like qualities in cadets? As Master and lecturer my experience shows that in today's maritime industry we suffer mostly from lack of this quality. This is far beyond what simulator courses can furnish the industry.

Simulators are not designed to create these kinds of qualities; the purpose of "Simulator Training" has never been this. Reducing sea time, in other words replacing "On board Training" by "Simulator Training" does not work.

It is very well known that 80% of human casualties are caused by human error. Perhaps this statistic is the only thing in the industry which has not changed for decades. Everything else has changed drastically, bridge equipments, deck and engine room machineries, regulations, guidelines and procedures and finally seafarers' attitude. The author strongly believes that everything has been modified positively only the latter has altered in a totally different way.