

When the Instructor Makes the Difference in Simulator Training
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'You grounded the vessel. We'll take a break. Grab a cup of coffee. See you in debriefing in 5 minutes.'

This announcement was not caused by an emergency on the great seas, but it did interrupt an intense atmosphere which was quite similar to real-life emergencies. 'The drama' took place in the simulator at FORCE Technology near Copenhagen, Denmark. A group of navigators were training 'ship handling' and every effort was made to create a training environment as close to real life as possible. In the latest 10 years simulator technology has been developed immensely. Millions of Euros was invested in making the computer animated ship movements, weather simulations etc. so good that the participants are able to 'forget' where they are.

Who Simulates and Why?

The participants were quite lucky this was a simulation. We will return later to the eager and tense participants and their grounding. In this article, we - Gert Rosenkvist and Geert Allermund - will present development and implementation of the simulation learning concept, called *Deltagerlogisk SimulationsTræning*, (DST) (Learner Focused Concept - LFC).

We have developed the concept for more than 10 years and FORCE Technology has helped us test and implement it. In cooperation with FORCE Technology we have worked for Venice Pilots, SAMTRA, South Africa (South Africa Maritime Training Academy) and Caribbean Maritime Institute, Jamaica.

Simulation is an extremely important part of most training and education. We are aware that the majority of learning combines theory and practice - that you have to practice before it gets 'serious.' Exactly this difference between training-reality and

the reality, in which the participant must excel after completed training, is one of the great challenges in modern training. We call it: The Transfer Problem. Sometimes the transfer between training and reality is so poor that nobody gets to learn anything at all. At other times, we manage to incorporate reality very well in the training, providing a good transfer to the reality in which the participant is going to work later. All things equal, we want a learning situation as similar to the participants' everyday challenges as possible. But, as our example showed, it is not always wise to have participants practicing in the 'real world'. For safety and financial reasons we wish to practice in a less complex situation than reality.

From 'Expert' to 'Facilitator'

Previously, FORCE Technology's instructors spent 75-80 % of the lessons in a simulator. But then, according to the instructors, when the crew had 'passed' the simulator assignments, it was far too difficult for the instructors to benefit fully from the debriefing.

In 1996, FORCE Technology decided to increase their focus on the pedagogical use of simulators in order to enhance the learning processes. This has had a huge effect on the utilisation of simulators. Today, only 50% of the lessons consist of simulator training and the following debriefing has become much more efficient. 'In 1996, we realised that it was not good enough to hire the best qualified captains as instructors,' Peter Sørensen says, Head of Department in FORCE Technology. 'We use very expensive simulator facilities, and it is therefore crucial to ensure that the training transfer is

efficient and focused on acquisition of skills as well as knowledge.' The instructors are no longer merely 'experts', they have become 'facilitators'. The philosophy and methodology behind this approach is described in the next paragraph.

'Learner Focused Concept' (LFC)

The technique of training adults, on which our concept is built, is rooted in a new perception of relationship between training and learning as opposed to prevailing methods. It is, however, a perception of adult learning theory which is gaining ground today, especially in Scandinavia. Previously, our training was based on presentations and lecturing, whereas today most professional instructors are aware

- that learning is a process requiring the student's active acquiring and processing of the subject matter
- that learning must begin at the student's starting point in terms of knowledge, understanding and skills
- that learning will be affected by the general social and emotional setting
- that learning is a subjective process which more often than not unfolds itself in a social interaction with the surroundings
- that learning is a complex process which often comes by through frustration, rejection of established 'truths', insecurity and lost expectations
- that learning does not progress in linear movements from A to B, but often moves two steps forward and sometimes one step back
- that learning also leads to unexpected changes
- and much, much more...

This perception of learning processes necessitates revision of the general view on the training process. Lecturing - where the teacher loads his knowledge off to the students - could never

address learning processes as described above. When the learning process is to accommodate such a varied learning concept, it needs to be challenged quite differently. A teacher standing at the blackboard loading off answers, good advice and fancy tricks to the students is absolutely not acceptable any more.

At FORCE Technology we have been extremely energetic in our efforts to establish this mutual understanding of the learning processes as the methodology and tools applied depend very much on the practitioner's (instructor's) basic perception. The instructors at FORCE Technology have to understand why they have to use the methodology, the simulator training tools and the applied training processes.

This other perception of the training processes we call 'Learner Focused Concept' (LFC) as opposed to the traditional teaching of skills. The LFC

- creates a safe and supportive learning environment with an adequate amount of challenges and 'disturbances'
- meets the participant at his/her starting point, i.e. uncovers the person's current level of insight (and possible lack of the same)
- contemplates and adapts the training processes according to the learning processes
- seeks to convey learning points via training tools tailored to the individual participant
- incorporates the correlation in which the learning is to be applied
- and facilitates the participant's active performance and processing of his/her experience

According to Peter Sørensen, the LFC process has now become rooted in the department's certified quality system. When developing new courses, the process follows detailed procedures in order to ensure total agreement between e.g. participants'

experience, the elements of the individual course and the specific content of the simulator training. While professional focused training takes place on the trade's terms based on the expert's perspective and professional structure, the LFC approach moves towards following and stimulating the learning process of the participant on his/her terms. A perception spoken for by the Danish philosopher and existentialist, Søren Kierkegaard, in his often quoted work about helping someone else ('The Point Of View For My Work As An Author', paragraph 2, 1843). The essence in this perception is reflected in the LFC approach involving the participant's background. This was further clarified by the Russian theoretic Lev Vygotsky (1896-1934) in his theories about Zone of Proximal Development.

The American theorist John Dewey's theories about the significance of experience in learning processes and his thesis 'Learning by Doing' have also inspired us in the development of the LFC approach to training.

Focus On the Instructor - Not the Simulator

The simulator is - although a very sophisticated tool - yet only a tool which makes the tutoring as realistic as possible without actually being in the complicated reality. However, the tools do nothing by themselves; they are altogether dependent on the people who operate them. This also applies to the use of simulators. This is why the selection and training of the instructors is extremely important. The instructors were tested, interviewed and picked out to ensure a match to an instructor's profile defined by a number of personal skills.

Peter Sørensen says that this process was very rewarding for the instructors, as individual targets were defined combined with continuous individual follow-ups.

Some of the qualities we looked for were the ability to handle processes in varied patterns of

movement, to be able to react, listen and see several ways to reach a target - to be creative. Another essential skill was the instructor's capacity to work analytically and select central learning themes for the participants based on complex activities in the simulator.

The instructor training included both an introduction to the ideas behind the LFC tutoring and training in the use of methods including the simulator learning.

Elements in the training were:

- methods of observation
- questions
- feedback
- follow up
- adaption of methods
- brush ups

The Instructor - From 'Expert' To 'Facilitator'

In our concept, we developed a perception and method for debriefing, which turned it into supervision rather than actual debriefing in the classical terms. This debriefing varies from the method used in the military (the so-called Critical Incidence Stress Debriefing, CISD). There are several reasons for that. Firstly, we want the debriefing to give the group of participants/crew an opportunity to reflect and learn from the simulator training. This entails that the instructor has to work more as a facilitator than as an expert. Furthermore, we want the participants to take active part in the debriefing.

Developing our concept, we studied a number of sessions performed according to the former method. We noticed that the instructor was an expert, asking questions (and occasionally almost 'interrogating') the participants, offering advice and giving the answers when the participants had none. Furthermore, we observed that the participants seldom spoke and when they did, it was almost always just to answer the instructor's questions. We also noticed that the participants were quite keen on protecting themselves if they

feared that they might have made a mistake. If the instructor pointed out mistakes, he was often met with arguments such as 'it was just a simulator, nothing real,' or the participants protested that the simulator had technical flaws. You could say that the participants spent a lot of time trying to avoid losing faces. Generally, the instructor was almost doing all the work while the participants merely leaned back and watched.

When introducing the new debriefing concept, the preconditions for the instructor to take on the facilitator role were provided by the instructor training and the following supervision. During the training it was vital that the instructor learned to listen to the individual crew member's description of his experience in the simulator, and that he assisted the participant in getting an overview of the complex flow of activities formed by the simulator sailing. Furthermore, the instructor had to learn how to ask questions aimed at improving the participant's ability to reflect and learn from the simulator training. They also learned to organise each individual debriefing in order to facilitate conclusions and perspectives involving the entire group.

The structure, on which the debriefing concept is based, is as follows.

The Debriefing Concept Structure

Phase 0: Preparation

The purpose of the preparative phase is to provide the instructor with knowledge about the participant's background, skills etc. and to establish a psychological contact with the participants, thus giving the optimal conditions for a fruitful learning environment.

The methods in this phase could e.g. include learning contracts in which the participants describe their individual expectations and contributions.

Furthermore, it is important that the instructor is very clear in his description of the setting and procedure for the simulator training and debriefing. We stressed that the instructor has to be professional, open-minded and positive, attentive, supportive and in control, always aware of the participants' requirements.

Phase 1: Simulator Training

The purpose of the actual simulator training is to give the participants an opportunity to practice the handling of specific situations in a learning atmosphere and to challenge their skills (personal as well as professional).

We learned that it is crucial to adapt the tasks and challenges to the participants as to explore their own capacity limits. This means that the instructor has to challenge the participants beyond their present skills.

Phase 2: Debriefing

The debriefing must encourage the participants' awareness of what they actually did in the situation, and to qualify their professional actions. 'Reflective questions' is the most efficient way to achieve this. The reflective questions method was originally developed by Karl Tomm and is being used in coaching, supervision as well as systemic therapy. Some of the central assumptions in this way of thinking are:

- Everyone will do what makes most sense to us
- our perception of the world reflects the images we have of the world
- the person with the problem also holds the solution
- problems always unfold in relations between people

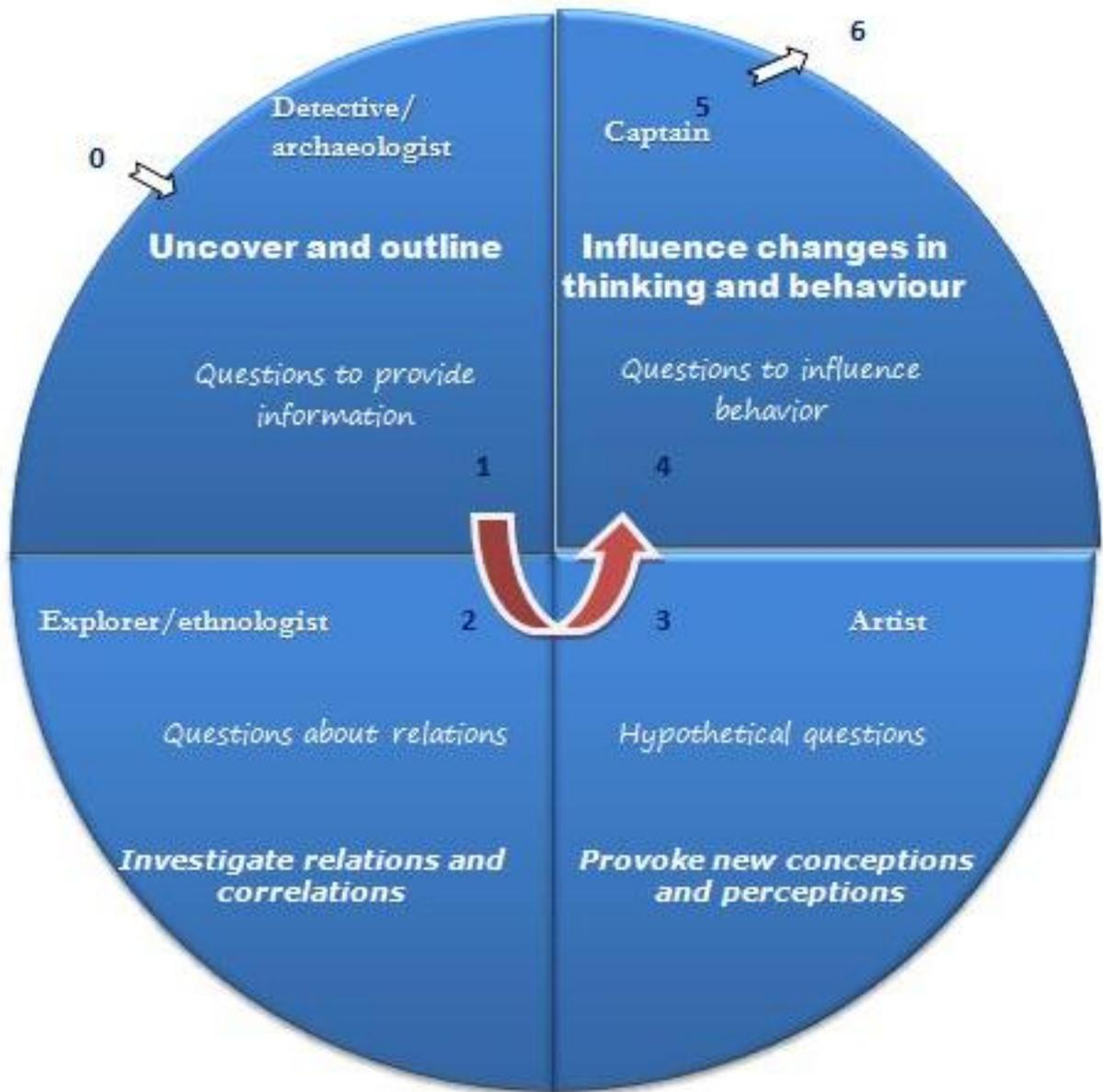
→ we do not always have to know the reasons for a problem in order to find the solution to it.

with four sections as shown in the model below. The model illustrates the four categories of questions.

The operational approach based on this thinking is often referred to as the Question Circle - a circle

Fig. below: The instructors soon embraced the Question Circle as they realised how it started reflective processes among the participants.

However, situations could arise during debriefing, in which the instructor had to offer his advice. But we strongly emphasised that the Question Circle must be put to full use first. We noticed that the more use the instructors made of the Question Circle the less advice they had to offer.



Phase 3: Acquiring and Integrating New Insight

The purpose of this phase is to have the participants create a synthesis about the learning process and integrate the lesson in their personal skills. The method here is also the circular questioning. The questions could be e.g.:

- Summary: What are our conclusions?
- Next time: What should you do when a similar situation arises?
- What should you hold on to and what should be different?
- How do you feel about this training?

'It has been and still is a difficult process to get the necessary time for debriefing according to this method,' says Peter Sørensen. 'It often takes a lot of negotiation to convince the customer that this method gives the greatest boost. However, there is an increasing need for efficient training, as we currently see more accidents at sea which could be put down to lack of skills. This problem is due to lack of labour; the crew must be promoted too quickly. For that reason alone it is necessary to ensure a very efficient training.'

The Group of Instructors as a Team

In order to stick to and apply the concept we formed a team of the group of instructors, giving them the opportunity to share their experience with the concept. Furthermore, we arrange brush-up days so that the instructors can discuss the challenges and problems they experience while using the concept. It proved necessary to continue developing and maintaining the instructors' expertise in training the LFC way and to strengthen the skills needed to exercise the role of a facilitator. The gain achieved from working with the whole group of instructors is that they form a mutual language and perception in their training which makes it easier for them to communicate and act together. The risk of having the interaction in the group made into a patchwork of individual home-spun psychological theories is thereby reduced.

We learned that the pressure towards a more 'subject focused' tutoring can be hard to handle - especially when the instructors are pressed on time and have to develop and carry out many courses and training sessions in a very short time. Detailed manuals and comprehensive Power Point presentations could in some cases be the quick solution. It is therefore vital that the management

ensures a safe environment and supports the quality assurance in the daily training. When the instructors deliver good results, these are often based on a solid pedagogical management.

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The Islands of 'Åland', Viking Line

Out there, north east of Stockholm's Archipelago, we reach a small insignificant group of rock islands. They do not look like much on a map and appear to be just a little bigger from the small propeller machine in which we are on our way to an instructor course for Viking line's navigators. The simulators are in place - and now it's the instructors' turn.

We work a few days to convey our points about learning processes: The importance of shifting focus from the training process to the learning process. How we meet the participants at their starting point. And we listen to and inquire into their ideas. After that, we work with the simulator training, applying the optimal methods and theories. It is absolutely clear to us when each participant suddenly gains the insight and adjusts his/her behaviour on the bridge accordingly. At the same time, his debriefing of the 'simulator team' changes dramatically, when applying the new questioning technique and focus. Learning processes are not to be commanded. Sometimes you need some detours. This time however, the participants advanced extremely well.

Chile, Valparaiso, 2001

Here at the coast of the Pacific Ocean lies a building shaped like a 'moon probe' between other buildings. We are at the Chilean Marine Training Station. Technicians, engineers and navigators have worked for months to rig the simulators in order to facilitate the training of ships' crews.

The erection of the simulators has come to a point when it is time to meet the instructors who will be working with them as part of their own education. We are very far away from home, about 12,609 kilometres. 21 hours' flight. And we are a bit anxious as to how different from each other we will be culturally. We are wondering if the LFC thinking, Kierkegaard, hypothetical and appreciative questions etc. will make any sense in this cultural universe. We have inhaled the atmosphere in Santiago for some days.

And the day for our meeting with the participants drew nearer. They were a small group of extremely experienced marine officers, a civil navigator from the Merchant Navy, a professor in pedagogy from the university, and a radar expert.

We were on unknown territory. Our entrance to the naval base, the meeting with its Second in Command, and our first meeting with the participants were all very educational to us. Firstly, the cultural context formed by the military universe was different from our usual surroundings. Secondly, the country's cultural and historical background was very different from our Danish background.

We were met with curiosity and commitment, and a few hours after starting the course, it was clear to us that our participants were more than eager to learn about Kierkegaard and take a dive into the pedagogic and psychological universes. The distance to Chile is absolutely shorter than it used to be.