"Assessing maritime EFL training. Reflections on how students learn Standard Maritime Communication Phrases, VHF competence, leadership and interpersonal skills in simulators.

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Abstract:

The Royal Norwegian Naval Academy has for a number of years successfully trained cadets in optic navigation, paperless navigation and radar use by means of simulators. This has prepared cadets for operational duty. Officers have been prepared for certificates according to IMO regulations. The academy employs a visual trainer, a 360° bridge simulator from KONGSBERG including five smaller bridge simulators or cubicles with 120° visual screens. A new approach to teaching maritime English has been developed: maritime instructors and English teachers have collaborated on curriculum and instructions, including the use of simulators for maritime EFL learning. The new platform has had an inspiring effect on learning and practising standard IMO Standard Marine Communication Phrases. Through a continually developed role-play situated in the English Channel, a whole class has been simultaneously activated on different bridges. It has been possible to enlarge the degree of difficulty with various means. Professional navigators, a merchant navy captain and a navy commander, have functioned as harbour masters and pilots in the control room. Various approaches to methodology have been tested out. I have investigated if and how these approaches and methods create meaningful learning. It has been tested out whether simulator training actually contributes to enhancing autonomy amongst students. From a leadership point of view it has also been tested out how the leader's "intent" influences work in the simulators and how the ideas of intent and autonomy as pedagogical devices are interconnected.

1.Introduction

The Royal Norwegian Navy Navigation Centre at the Royal Norwegian Naval Academy has for nearly three decades trained cadets and seafarers in optic navigation, paperless navigation and radar use by means of simulators. The academy employs a 360° visual trainer, 5 smaller bridges (A, B, C, E, F) with 120° visual trainers and 30° aft channels including RADAR and ECDIS. Attached is an auditorium for briefing and debriefing and

an instructor's control room. So far this has been used for operational purposes only to prepare cadets and others for IMO regulation certificates.

The collaboration between the English section at the Naval Academy and the RNoN Navigation Centre started during autumn 2008 when two assistant professors identified common objectives and started to think and act holistically about creating course material. The English section had previously selected material for maritime and naval English by itself, now a new approach was launched. The novelty partially consisted of navigators (educators) making explicit what maritime students needed from their point of view, thus forging a base that was much closer knit to the maritime opus operandi than what had previously been the case. Out of this arose the desire to do English SMCP training in the simulators by means of role-play, VHF training and a more pronounced focus on the standard maritime communication phrases. Incorporated in the curriculum was also material on naval doctrine and vocabulary, operational issues and technical and intercultural texts.

Since our academy educates officers for service in the naval defence forces, thus offering an integrated education where navigational classes co-exist with classes in leadership, technology, English and sea power, it was early on important to retain focus on navigation as part of a set of interacting skills that is demanded from an officer. This is the reason why I have also sought to investigate what other qualities, apart from the linguistic ones, that simulator exercises address and enhance. In this respect I have both tried to investigate to what extent and how leadership issues and pedagogical models of autonomy and the leader's intent are promoted in simulator exercises.

Throughout the paper, my emphasis will be to show how simulators affect the learning of SMCP; how it is perceived by the individual students; what is more or less effective; what exactly is being learned or acquiesced; how does classroom work contribute to the learning in the simulator frame work; and what is the effect of having professional navigators participating in the role play. We started out with two classes, but due to lack of simulator capacity, we had to choose one of them, a class of Deck Officers' Class 4, that proved to have a lot of potential for development. Also after finishing the class, these students have contributed to the study by filling in a rather comprehensive questionnaire on SMCP practice, leadership skills, simulator issues and other theoretical entries related to their simulator practice. This will, along with my own observations and reflections, provide the core elements of the paper at hand.

The paper will describe how and with which means the simulation was carried out, it will present the data material, the analysis and my reflections that emanated from the survey.

2. Literature survey.

Before starting working in the simulators, the students had a crash course in intercultural communication after they had read " Intercultural Competence on Board" by Lutsenko and Stok (2007) (part of our curriculum). For the practical use of VHF, we have watched Peter C. van Kluijven's videos with great interest. As for how to put together a simulator course, it's been most useful to consult Diaz (2005). Other work on simulator and language learning that have been instructive are Losey (2000), Barnet (1997) and Yakushenchkina (2002). For work on student autonomy, I have consulted Holec et al (2004), Holec (1979) and on the topic of "leader's intent" I have used the *Norwegian Forces Joint Operational Doctrine* (2007) and *Man the Braces! Naval Operational Leadership and Leadership Training* from the Royal Norwegian Naval Academy (2009).

3. Target area
Practice: language acquisition in the simulator

The visual bridges A-D were employed with three – four people per bridge. Each bridge is fitted with:

- DataBridge
- SeaMap 10 ECDIS (SM10)
- Radar (DB10)
- Cruise consol
- Map desk
- Standard bridge equipment such as GPS, log, STK panel, VHF, binoculars etc

The students were rather inexperienced navigators, the majority having served a year in the Coast Guard as deck hands before entering Officer Candidate's school in order to do Deck Certificate class 4 over a period of two years. The fact that they had little experience in navigating presented a challenge for the instructors in that they had to create scenarios where language and communication were more important than handling the vessel, yet manoeuvring had to be mastered in order that a natural cause of event could take place. Hence we chose the same scenario each time: crossing the English Channel from either side. For each simulation exercise, however, new and more difficult moments were added to increase difficulty. Such modifications would be e.g. increased traffic, day versus night, visibility, currents, various accidents and altered sea states. The simulation would also introduce various levels of stress, especially with high ship density and a lot of VHF communication, both from harbour masters, pilots, and agents as well as from other vessels in the areas, all affecting or disturbing the crews in action.

Each crew would initially get an individual form with all necessary tasks and information to get started. For the next sessions this would then be slightly altered.
An example of such a task form:

Exercise English Course ON-0 (Figure 1)
Bridge A

Exercise 1	
Ship model: **Ship name:** KV Nordkapp **Call sign:** LBAV	**Voyage data:** **From:** At anchor outside Dover **To:** Calais **Cargo:** N/A
Area: English Channel	**Date:** As today **Time:** Zone -1
Initial data: **Position:** As found on GPS before start of exercise **Course:** As planned by students **Speed:** Half Ahead	**Environmental data:** **Visibility**: Good Wind: westerly 10 knots Current: 220°1,5 knots
Learning objectives: Practise maritime English language	VHF channels: VHF Ch 16 Dover coastguard: Ch 10 Dover pilot: Ch 13 Calais harbour Ch 14 Calais pilot Ch 9
Tasks: Form a bridge team Communication on bridge: English Call harbour before sailing Communicate with other vessels/authorities when necessary. Write a log	

(Figure 1: Hans Magne Gloppen)

Before entering the very first simulation, the class had worked on general SMCP, and had watched a few videos from Peter C. van Kluijven's International Maritimes Language Programme, which proved very useful for a start.
The students, eleven in all, were asked to delegate different roles among themselves: 1) commanding officer 2) navigator 3) log writer.
Students were each time asked to fill in a log this way (figure 2):

LOG (figure 2)
Name of vessel:
Date:

Hours	Course	Log (distance)	Misc. occurrences	Sign.

Tasks

Sign.

4. Database

In the attempt to quantify to what extent students had learned various skills, I asked them to fill in a form and mark off on a scale from one to six how well they a) felt that that particular skill had been promoted in the exercise and b) meant they has acquiesced that skill. The following data (figures 3, 4, and 5) underneath show that in all categories students scored an average 4 or 5 out of 6 which indicated that they were remarkably happy with this learning mode. As for "Practice" (SMCP skills in bridge communication (1), VHF communication (2), NATO alphabet/numbers (3), log writing (4), emergency calls (5)), their answers provided us with these numbers:

	Practice				
	1	2	3	4	5
A	4	4	4	2	1
B	5	4	3	2	5
C	6	5	4	4	3
D	5	6	2	6	4
E	4	5	4	5	5
F	5	5	5	6	4
G	5	5	4	4	5
H	6	5	4	4	2
I	6	5	6	5	6
J	5	5	6	5	4
	51	49	42	43	39
Average	5,1	4,9	4,2	4,3	3,9
Median	5	5	4	4,5	4
Mode	5	5	4	4	5
ST. DEV.	0,73786479	0,56764621	1,22927259	1,41813649	1,52388393

(Figure 3)

I also did the same test on leadership skills, and asked them to assess (on a scale from 1-6) a) how simulator works promote the skills listed below and b) to what extent they had participated actively, their scores were very similar (slightly higher). Leadership skills that were tested were: teambuilding: delegating tasks (1.1.1), teamwork (acting out diverse roles

and ranks) (1.1.2), situation awareness (1.1.3), common mental models (1.1.4) and awareness of complexity of shipping/naval warfare (1.1.5)

| 1,1,1 | | 1,1,2 | | 1,1,3 | | 1,1,4 | | 1,1,5 | |
A	B	A	B	A	B	A	B	A	B
	4	2	3	3	4	2	3	3	
	5	5	5	6	4	5	4	4	
	4	4	3				4	4	
	4	4	6	6	6	5	4	5	
	3	4	5	5	5	5	4	5	
	6	6	6	6	6	6	3	3	
	5	5	5	5	5	5	5	5	
	4	5	5	5	5	5	5	5	
	6	6	6	6	5	6	5	4	
	4	4	5	5	4	4	5	5	
	45	45	49	47	44	43	42	43	
	4,5	4,5	4,9	4,7	4,4	4,3	4,2	4,3	
	4	4,5	5	5	5	5	4	4,5	
	4	4	5	6	5	5	4	5	
	0,97182532	1,1785113	1,10050493	0,97182532	0,78173596	1,20185043	0,78881064	0,8232726	1,054092

(Figure 4)

Also when it came to technology, the students assessed to which the simulator was instrumental as a learning tool (1,6) and to what extent the navigation itself helped or hindered at performing language (1,7)

Technology

1,6	1,7
5	2
5	5
6	4
6	6
6	5
6	6
6	
5	5
6	6
5	5
56	44
5,6	4,4
6	5
6	5
0,51639778	1,26929552

(Figure 5)

From a customer satisfaction point of view, these data show that students at least experience the simulator as a most valuable learning tool. Although the number of respondents is low, it is still very interesting to note that students continually answer at the upper end of the scale when asked about such a diverse set of questions, a univocal acknowledgment of the simulator as an excellent vehicle for learning maritime English. The data clearly show that our

take on simulator methodology generates meaningful learning for the students. Next I am going to analyse the qualitative data that the students added to each question; from them it is possible to gain a wider understanding of how language training in the simulator works on the individual student. This does not only apply to language acquisition as such, but also to the adjoining fields that play along in the simulator room, namely leadership and pedagogy.

4. Analysis and discussion

4.1. The simulator as learning site or the various sites of simulator training.

In " The use of simulators as a tool for training and examining seafarers" M.L. Barnett (1997) contends that the main characteristics of a simulator are transfer and fidelity where transfer is the measure of learning efficiency on a simulator, and fidelity is the similarity in degree between a simulated situation and the same operational situation. My students wrote things like "the simulator is highly relevant for my education" and "I learned a lot and it was a perfect learning area to speak and practice English" which I interpret as experiences of high fidelity. That being said, we must include the other venues of learning into our description. For each exercise we had (mostly) worked on a topic in the classroom beforehand, the class was also briefed before they entered the cubicles and were debriefed afterwards. Following this was also a discussion in the classroom where I would present some of the comments I had made during simulation, either for the whole group or to the individual squads. One simulation exercise would thus be constituted by activities in five different learning sites. Students' responses varied quite a bit on how much work in advance was necessary to be done in the classroom; some wanted more instruction hands on before each simulation. In my attempt to instil autonomy and a greater sense of responsibility for the individual's learning, we had deliberately not wanted to spoon-feed students with every material needed prior to the simulator exercise. It was thus very interesting to watch who understood how to prepare on their own before each session, and how these students (mostly girls) in the end came out with both a more effective learning strategy and also a sharper learning curve than some of the boys (there were 4 girls and 7 boys in the class). There was another reason for holding back some information initially. We wanted students to activate all their senses and pick up the correct terms from the intercom available to all, i.e. everybody could hear all the communication at the same time. We were astonished at the speed by which students would pick up the correct (initial) VHF phraseology by just listening in on the others, and retaining this information/knowledge throughout every simulator exercise. In this respect we deviate somewhat from Y.Yakushenchkina's (2002) assertion that "the mere emulation of reality teaches nothing." We found that emulation used this way spurned agility and curiosity, and created a genuine wish among students to adopt the correct SMCP phrases. Debrief and post-work in class then inspired students to be well prepared for the next simulator session.

4.1.1   Assessing the acquisition of practical maritime skills.

Since this paper aims at creating an understanding of SMCP acquisition, I would like to make clear the distinction between "learning" and "acquisition" along the lines of my previous learner autonomy research with EU collaborators (Holec et al 2004):

> -the term "learning" refers to over actions we consciously undertake in order to

master a language; it is behaviour and can thus be observed and controlled: learning activities are defined by their objectives (what), their forms and contents (how) and their assessment (with what results);

-the term "acquisition" refers to the cognitive process by which declarative (but not explicit) and procedural (but not mechanical) knowledge is internalised and mastered; it is an internal, covert, non-conscious process and thus cannot be observed but only inferred, and cannot be controlled; there is no direct, causal relationship between acquisition and learning (Holec et al 2004).

To acquiesce language skills is thus a more demanding operation than simply learning in controlled environments. The simulator with its adjoining venues seems to be a room where acquisition can take place in that it allows for a number of dynamic processes where the student to a large degree can take responsibility for his or her own learning on his or her way to internalise lasting knowledge. SMCP do help control situations, securing and safeguarding ship-to-ship communication, yet the complexity and unexpectedness as the very nature of seafaring and naval combat cannot be underestimated, hence students and cadets will at all times also need to practice chaotic situations. We therefore need to train automated skills in the purpose of becoming internalised in the perspective of acquisition. The simulator is therefore in many ways a unique tool in its ability to both create havoc and stress at sea. In the following I shall analyse and discuss some of the major findings from the qualitative data that emanated from the questionnaire on practice i.e. communication on the bridge in general, VHF communication, NATO alphabet and numbers, log writing and emergency call, i.e. the core training objectives of the exercises. In general students agreed that bridge communication was essential in order to handle a vessel properly. One student said that what she had learned for her future work in the Naval Forces, she had learned in the simulator. Others were conscious of the fact that the learning had taken place both in the simulator and in the classroom, and came to appreciate more and more the classroom work ahead of the simulator. We checked answers for male and female and found that female students were overall more appreciative of prep work in class while male students emphasized the group work in the simulators as the main learning area. It was somewhat astonishing that the students age 19-25 would use a relatively lofty term such as "to learn for life," in other words, they seemed to grasp very clearly what Barnet (1997) coins something that "mimics part of a real situation in order to allow an operator practise and/or demonstrate competence in an operation in a controlled environment."

When assessing the introduction of the VHF, several used John Dewey's phrase "learning by doing." Most had been unfamiliar with the VHF to begin with, but were very soon familiarized with it and found the input from teacher and navigators. This was one of the areas were they felt a clear progress, and one student asserted that this skill was the most important skill of all that could be practised. Answers about NATO language, log writing as well as emergency calls indicate that all these areas are regarded as important, but students need an unequal amount of preparation in these areas, hence some diagnostic testing in these areas might be a solution to the differentiation problems. As for practising emergency situation where students had been exposed to a number of videos in class, they univocally suggested a larger number of emergency practises in the simulator than what was necessary with the other course elements. A few students mentioned the fact that they had actually forgotten to send distress calls when they collided with a vessel; a strong direct warning that more individual prep work was needed.

4.1.2. Assessing leadership skills as developed during simulator practice

Descriptions of English training in simulators all tend to focus on the element of control. Instructors and educators in the control room possess a large manipulatory repertoire for the creation of various challenges at sea. The entire environment is thus set up like a game in motion. The movers, or participants, enter the stage with their human flaws and splendour: the artificial game world meets the meek and the mild, the strong and the wild. This tension between the machine and the human element creates a very interesting landscape of what goes on between people in a controlled, yet unpredictable environment. As in the real world people need to use certain skills to come to grips with this environment. Every student in the class seemed to agree that leadership skills are what we employ in this scenario.

Students identified many regular problems concerning leadership in the simulations even if leadership per se had not been singled out as an aspect of the simulations. The very nature of the exercise forced the members to solve problems, delegate tasks and some changed roles so everybody would try a different set of roles. Team building was visible during the exercise while cohesion was evident after the exercise when problems had to be sorted out. Throughout students' answers they display an understanding for processes going on, be it situation awareness or dealing as a team with the unexpected. The simulator exercise clearly addresses a number of leadership issues that are easily identifiable even if the students to begin with had not focused on them as such. Since solving maritime missions collaboratively along with mastering the correct SMCP English seem to be equally important for sailing safely and handling emergency situations, it seems to me that an increased leadership focus would enhance the quality of simulator practice. To exclude the leadership perspective in simulator language training would in my opinion make for a less safe execution of a bridge operation. From this study it seems like students do not favour isolating language skills from leadership skills. Interpersonal bridge communication also needs to be further investigated along with leadership issues.

4.1.3. Assessing autonomy and leader's intent

One of the secondary objectives with the simulator experiment was to find out whether simulator practice would enhance student autonomy, and also if an autonomous learning practice could be linked to "commander's intent" (from the "Norwegian Armed Forces Joint Operational Doctrine" understood as, amongst others, the delegation of power from a commander to a subordinate to ensure continuity of an operation an effective adaptation of a plan even in the face of friction, chaos and uncertainty, p 130). My interest for these issues arose when I noticed a change of attitude and responsibility in general as the simulator practice proceeded. The group work and task solving initiatives in the simulator sessions were transferred to regular English classes where students had previously been quite dependent on exact instructions. Ahead of the next simulator session I then (re-) introduced the concept of Commander's Intent (with which some were familiar), stating *why* we were doing the exercise, *what* was to be achieved and *what* the desired end state would be. Then I left it all open what our next step would be, and asked the class for suggestions. One girl picked it up immediately, and listed what we had to do during the rest of the class in order to comply with the Commander's Intent. Now the link from learner autonomy "the capacity to take charge of one's own learning" (Holec 1979) to the practise of showing responsible actions had spurned some interest: had the students noticed some of the grips and their effects that were undertaken for the sake of pedagogical win? To my slight disappointment, only a few students had been aware of the Commander's Intent (i.e. it did not last into the next simulator session), but they did understand that there were certain missions that had to be solved. Unexpectedly, several

said it did have an effect on their work, which leads me to conclude that if the Commander's Intent be of any use, it cannot be strongly enough emphasized that it is understood by everyone in every way prior to a mission, in this case a simulator exercise.

5. Conclusions

From this investigation, all participating students assessed the simulator to be the place where they felt the best EFL maritime learning took place. This ought to imply that far more maritime English classes should take place in simulators in the future. The students felt it was a very practical tool that also provided a lot of fun into language acquisition; an important insight not to be overlooked. In a class where personalities were many and diverse, it was remarkable to notice that there were only minor discrepancies in answers, both in the quantitative as well as in the qualitative sections. The only gender discrepancy was found when assessing classroom work versus simulator work; girls juxtaposed the two, the boys favoured the simulator over the classroom. Every student greatly enjoyed the fact that we had professional navigators in the control room which provided for very authentic VHF communication. The teacher's and navigators' enthusiasm and dedication were also motivating factors. One of the most important findings was that leadership issues were easily and readily identified and sorted out, which had me conclude that leadership-training aspects ought to be part of language training practises in the simulator since they seem to be very interconnected. Simulator training seems to enhance autonomy in that the effect of team- work had bearings on classroom work in general. To bring in both the methodological aspects of autonomy and the commander's intent seemed to have had more value for the teacher. However, teachers and instructors also need challenges that may contribute to paving way for better work with simulators and other vehicles of maritime language acquisition of the future.

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