

APPLICATION OF SECOND LIFE IN PROMOTING COLLABORATIVE LEARNING

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ABSTRACT

Increasingly, Massive Multiplayer Online Games (MMOG) and Virtual Worlds are being utilized for development of key competencies and 21st century skills in education. This paper is aimed at proposing a conceptual framework for the virtual world known as Second Life for potential application in Maritime Education & Training (MET). The need for developing collaboration as a competency for future seafarers and past applications of Second Life in supporting training and education is discussed. The expected outcomes from the proposed research activities will lead to establishment of a global MET community in Second Life that could facilitate communication and knowledge exchange across universities.

KEYWORDS

Collaborative Learning, Distributed Cognition, Second Life, Virtual Environment, Distance Education

1. INTRODUCTION

Research literature has indicated that Massive Multiplayer Online Games (MMOG) and virtual worlds can facilitate the development of 21st century skills such as problem solving, collaboration and critical thinking by their unique nature and opportunities they provide in term of reflective practices (Hartley et al. 2014). In this regard, King (2013) has also drawn attention towards the shortcomings of the existing educational frameworks and how MMOGs or virtual spaces can promote acquisition of skills related to Information and Communication Technologies (ICT), collaboration and leadership in the modern distributed workplaces. Second life is one of such popular virtual world where users can interact with the environment and each other via their own graphical representation or “Avatar” and offers unique opportunities in addressing the needs highlighted above. There are several other virtual worlds in addition to Second life which offer similar experience such as *OpenSim*, *There*, *Kaneva* etc. But relatively ease of access, richer immersive experience and the ability to create complex environment has enabled Second life to remain popular among the users of virtual worlds and researchers alike.

A key characteristic of modern sociotechnical systems such as maritime domain is the distributed nature of operations. As the systems have evolved over the years with increasing use of technology and automation of tasks, the result has been unchecked rise in number of information elements, associated functions and interfaces at the workplace. These changes had a distinctive effect on the nature of operations as they are now increasingly being executed by a specialized team of individuals with technological artefacts playing a fundamental role. In this regard, an example of the most elementary ship operation i.e. Navigation can be considered. Navigation which essentially involves safely guiding the ship from Port A to Port B is carried out by a group of individuals known as “bridge team” with the Captain being overall in charge. They are further supported by Pilot services and/or Vessel Traffic Services when in the vicinity of the port. At a more abstract level, the routing instructions and ship owners’ standing orders are influential in making deciding the route of the ship. This example portrays the various levels of control involved in the navigation of a merchant ship and each of the level can be thought of as a Joint Cognitive System with technological artefacts seamlessly joining the levels and supporting the communication and flow of information. The cognition required to

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determine actions and execute decisions is essentially distributed amongst different levels. Figure 1 illustrates the above description.

With such distributed expertise in practice supporting critical operation of navigation onboard ships, it is imperative that non-technical skills such as collaboration and leadership are inculcated in education and training of seafarers. The regulatory bodies concerning Maritime Education and Training (MET) has recognized these trends and have incorporated the guidelines related to the development of non-technical skills of seafarers along with the regular technical skills, as can be seen in latest amendments proposed under Standards of Training, Certification and Watchkeeping regulations (STCW) 2010.

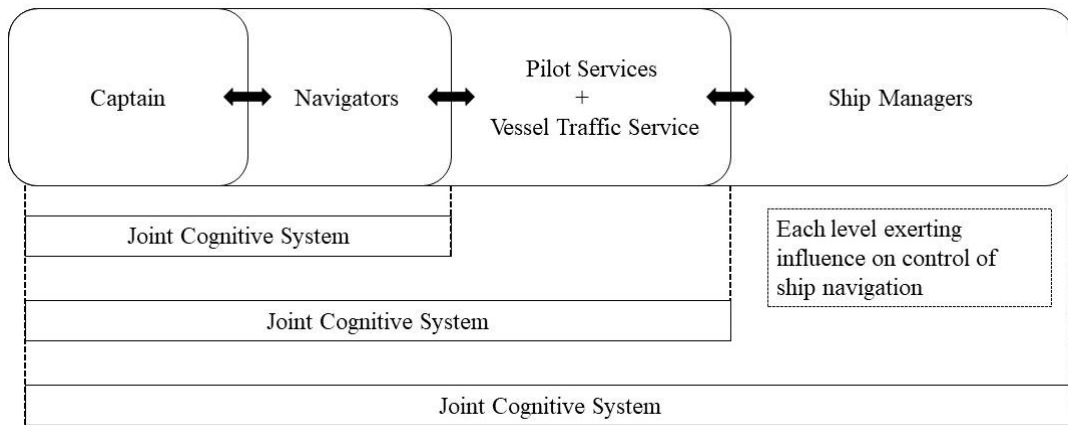


Figure 1. Various control level for ship navigation (Adapted from Hollnagel, 2002)

However, in the research literature related to MET, there is still insufficient application of pedagogical interventions applied with the aim of developing collaboration as competency for the modern seafarers. Collaborative learning can be defined as co-construction of knowledge and competence development where individuals with different but complementary expertise have the opportunity for creative thinking, introducing new ideas and taking creative actions (Goggins & Jahnke, 2013). Collaborative learning is argued to provide other benefits associated with it rather than pure cognitive gains such as social and motivational gains occurred during learning (Stribjos, 2011). Such approach is required in the future frameworks for maritime training where learning and knowledge creation will be framed as part of work integrated in the working processes. The need to address these challenges becomes vital with the current technological developments taking place in maritime domain. Increasing automation and development of autonomous vessels will in near future demand that the operators collaborate with a wide range of individuals with sophisticated ICTs at their disposal. It is therefore required by the researchers and practitioners in MET to utilize novel frameworks from the learning sciences to shift the learning paradigm from dominant behaviorist to constructivist approaches which actively promote co-construction, collaboration and dialogue between the trainee and its peers.

2. SECOND LIFE

Second life is an online open world virtual platform created by Linden Lab (<http://lindenlab.com/>) in 2003 and since then has increasingly being used for various purposes such as role-playing, arts, education, work simulation etc. It boasts of about 600,000 active users as of 2017 (Jamison, 2017). Second life's popularity has been attributed due to the platform offering relatively advanced technology in terms of day/night cycles, communication modes, weather system, character mobility and so on. It even has its own currency system with the currency called "Linden Dollars" which enables the platform to have its own economic system with transactions worth of millions of US dollars. Although for some advanced featured within Second life, it is required from users to buy them using Linden Dollars. However, it is also possible to experience the platform with basic features free of cost.

In relation to Second life and opportunities it offers for educational research, several studies have been conducted. In Mørch, Hartley, and Caruso (2015), the authors demonstrated how participants from a teacher preparation program were able to cultivate interpersonal problem-solving skills utilizing role playing in Second Life. Similarly, In Prasolova-Førland, Fominykh, Darisiro, and Mørch (2013), the authors utilized the platform of Second Life for training aspects of cultural awareness for military operators preparing for international deployments. Boulos et al. (2007) provides examples from health and medicine domain as to how Second Life is being used for dissemination of health-related information and by aged individuals as well by persons having physical disability for recreational purposes. Muir, Allen, Rayner, and Cleland (2013) in their study demonstrated how Second Life can be used by teachers for handling diverse student behaviors and engaging in reflective discussions in the classroom. These studies show how Second Life has been used by educators and practitioners involved in training for different purposes and facilities it offers in different contexts. Figure 2 below, provides some snapshots of how the platform appears for an ordinary user in various virtual locations within it.



Figure 2. Environment of Second life as appearing in certain locations recreated by the platform

3. APPLICATION OF SECOND LIFE FOR MET

The authors are currently involved in developing experiments and activities that would involve utilization of Second Life for the maritime trainees situated at department of maritime operations, University of Southeastern Norway (USN). At present, two potential application of Second Life for MET are proposed: (1) Organization of Student workshops with topics from syllabus involving maritime courses and (2) Development of a Global MET community aimed at replicating many of the existing functions of a maritime school in a virtual space and provide a platform for collaborative discussion between participants from different countries. Figure 3 below highlights the conceptual framework for the process.

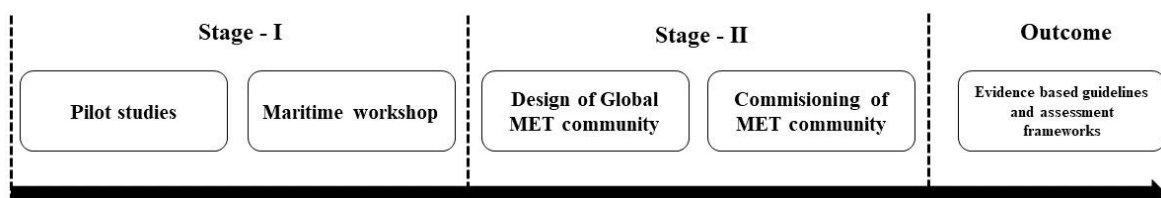


Figure 3. Conceptual framework for utilization of Second Life for MET

USN is a part of 4 university consortium involved in uplifting the maritime competence in Norway. There are 2 workshops organized by MARKOM2020 annually, selecting latest research challenges in maritime domain (www.targ.com/workshops). In this context, a virtual workshop can either substitute or may provide an additional arena for the actual workshops planned by the organizing practitioners. It is also observed that due to travel and financial investments usually required in such workshops it has limited student participation. As such a virtual workshop can offer inexpensive and engaging experience to students with considerable less investment of resources required from either the organizer or the students themselves. As normal ICT tools (Slide show or voice-based communication) along with communication modes can be adequately replicated in such settings the above objective can be utilized. Interaction analysis technique can be utilized to analyze the data from Stage – I which will help establish guidelines for creating a virtual space replicating a maritime school.

In the Stage - II of the project, an online space will be created/commissioned in Second Life with the functionalities offered by the platform which will be dedicated for creating a Global MET community with dedicated space for the participants of different countries/institutes to demonstrate their existing projects, organize exhibits and promote networking amongst them. Table 1 below, outlines the approach in each stage and respective outcomes.

Table 1. Planned activities and proposed research methods for realization of research objectives

Stage	Planned activities	Proposed research methods	Outcome
Stage - I	Pilot studies, Organization of in-house maritime workshop	Virtual ethnography, Interaction analysis	Framework for designing Global MET community
Stage – II	Initial surveys with instructors & experts, Creation of Virtual space	Semi-structured interviews. Design based research	Evidence based guidelines and assessment framework for collaborative learning in MET

The students and teachers participating in the virtual community will thus get an opportunity to explore different aspects of maritime operations with both local and international participants. Some of the possible implications of this research would be increased knowledge sharing across universities, enhanced cultural sensitivity and opportunity for reflective practice. Such development can also help bridge the knowledge gap by increased dissemination from relatively technical advanced countries to the developing countries and facilitate dialogue. The data gathered from this stage will be further analyzed for establishing guidelines for online courses and assessment framework which can be solely directed in cultivating collaboration as a competency for the maritime operators.

4. CONCLUSION

For catering to increasing need for development of crucial non-technical skills, the use of virtual platform called Second Life is proposed. The conceptual framework described is aimed to utilize the platform for proposing guidelines for developing frameworks which facilitate the acquisition of collaboration as a competency for future maritime trainees.

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