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Organization and management of an innovative intensive programme in rail logistics

Marin Marinov ^a*, Stefano Ricci ^b

^a NewRail – Newcastle Centre for Railway Research, Faculty of Science, Agriculture and Engineering, Newcastle University, Newcastle upon Tyne, NE1 7RU, United Kingdom, Address, City and Postcode, Country

^bDICEA - Dipartimento di Ingegneria Civile, Edile e Ambientale, Università degli Studi di Roma "La Sapienza", Via Eudossiana, 18, Roma, 00184, Italy

Abstract

In this paper we present an intensive programme in rail logistics that will be organized and delivered in Newcastle University in the summer of 2012. The intensive programme employs an innovative multidisciplinary approach that combines a number of learning methods, such as: Lectures; Project-based learning; and Technical Visits as well as Thematic Seminars. We will work with approximately fifty undergraduate students and twenty professors in railway, transport and logistics from different locations from Europe. The targeted learning outcomes are to develop the undergraduate student's ability to initiate and carry out analysis, research, seminars and workshops with the purpose of solving railway and logistics-related problems.

Keywords: Intensive programme, rail education, logistics, training, multi-disciplinary approach;

1. Introduction

We live in a changing world, where more skills are needed than ever before. Climate change and green house gas emissions have become a major driver for policy and decision making leading to new ways of thinking, technological inventions and significant changes to preferences and priorities for sustainable development and economic growth. In the transport sector railways have been recognised as an environmentally friendly transport mode with a significant potential for sustainable development. The increasing interest in railway services and high speed trains has given railways a new meaning. The railway industry is facing potential growth requiring professionals with higher level skills and qualifications.

Learning is a natural skill, which can better be facilitated through the use of well identified sources, methods and programmes. One contribution which addresses the need for high quality educational resources is an intensive programme in rail logistics in Newcastle upon Tyne, to discuss and promote lean logistics principles for modern and efficient railway systems.

* Marin Marinov, Tel.: +44 (0) 191-222-3976
E-mail address: marin.marinov@ncl.ac.uk

2. Objectives

The programme's main objective is to develop, organize and run a three week intensive programme in rail logistics. This objective is in line with the strategic vision of the Life Long Learning programme of the European Commission, where professors and students will work together to improve the quality of railway and logistics teaching, training and learning.

Specifically, *the intensive programme* will provide realistic opportunities for lecturers and students from different cultures to make railway and logistics learning useful, sustainable and ever growing, where one of the main aims is to execute this programme as an event of excellence in railway and logistics teaching, training and learning in Newcastle upon Tyne.

3. Multi-disciplinary approach

To ensure a multi-method multi-disciplinary approach in developing, organizing and executing the intensive programme, the programme will work with rail professionals and logisticians as well as historians. The Stephenson Railway Museum and Tyne and Wear Metro Depot are happy to host technical visits and work with students and teaching staff brought together from different higher education institutions from the UK and Europe in order to:

- Encourage efficient and multinational teaching and training of railway and logistics topics which will contribute to a more consistent and uniformed education and training in European universities;
- Enable lecturers, researchers and students to work together on railway and logistics problems in multinational groups and so benefit from special learning and teaching conditions currently unavailable in a single institution, this will allow new perspectives on the topics being discussed and studied to be obtained.
- Allow members of the teaching staff and trainees to exchange views on teaching, training and learning contents and new curricular approaches and to test teaching methods in an international classroom environment.

4. Multi-disciplinary approach

The programme is believed to be an innovation in itself because it appears to be one of the first examples of a multi-disciplinary intensive programme in rail and logistics which has been proposed to discuss and teach how railway services can benefit from lean logistics principles and how logistics chains can benefit from an environmentally friendly transport mode.

Based on knowledge sharing, creative thinking and innovation with the purpose of contributing to the sustainability agenda the programme is considered to be a timely and important project due to the increasing interest in railway transport among policy and decision makers worldwide. A few examples are the booming high speed trains in China, US and Brazil as well as technological developments and pilot projects implemented and exploited successfully in Europe and Japan. Needless to mention the speed record of 574.8 km/h reached by Alstom, the SNCF and the RFF on 3 April 2007, with a test train on the East-European high-speed line. In terms of rail freight worth mentioning are *Truck-Train* concepts for urban freight and horizontal transshipment equipment for efficient terminal operations.

5. Methodology

The methodology employed is a combination of dynamic teaching schemes by lecturers and a strict fixed schedule of activities for students.

The programme is aimed at working closely with participants from the New EU Member States (i.e., Bulgaria and Romania) and Turkey. Therefore, all the participants from Bulgaria, Romania and Turkey are heavily involved in every day teaching and learning activities. Teaching staff from the Old EU Member States are involved in with a more flexible scheme employing also working remotely with students on research projects using the internet.

Specifically, *the intensive programme* will span three weeks, where:

Lecture Week - During the first week lectures on specific topics will be delivered. Specifically, the lecture week encompasses five thematic days. Each day will be dedicated to a specific thematic area, as follows:

- Day 1 – Logistics and Supply Chain Management;
- Day 2 – Rail and Multi Modal Transport;
- Day 3 – Rail Infrastructure and ITS;
- Day 4 – Vehicles, Environment and High Speed Trains;
- Day 5 – Railway Operations, Time-tabling and Control.

Within each thematic day five lectures on specific topics will be delivered by lecturers from the universities of the participating institutions. Each lecture is planned for forty-five minutes followed by fifteen minutes for questions. Each thematic day within the first week of the programme terminates with a thirty minute discussion on the main topics lectured during that day followed by time for mentoring. Facilitators are allocated to each discussion. At the end of each discussion short summary reports will be produced to summarize the obtained results and file the progress achieved.

Research Week - During the second week professors and students will work on research projects in different groups. Desired effort on student-professor ratio is three professors per seven students. Some of the senior professors will work remotely with students on selected research topics and therefore web conferences for mentoring will be organized. It is believed that such an approach will increase the distance learning' abilities of the students and as an extra plus we will experience savings in terms of travel and accommodation for in-between days.

More specifically the objective of the research week is to help students develop the necessary skills for team working and also the students' ability to do research. Professors and students will therefore be divided into groups to work on research projects. The following topics for research projects are envisaged:

- Comparative assessment (among different countries) of the impacts of rail deregulation on rail transport performance;
- Barriers for intermodal transport system development;
- Urban freight movement by rail;
- Logistics principles for efficient rail systems;
- An economic feasibility study for an urban light rail line;
- and the like.

At the end of the programme each research group will write a short research report and prepare a PowerPoint presentation. The PowerPoint presentations will be delivered to the Programme Progress Committee (PPC) during a thematic seminar in the third week of the programme.

Multi-Activity Week - During the third week of the programme technical visits will be organized followed by workshops and thematic seminars.

Specifically:

- Two technical visits will be organized, as follows:
1st to the Tyne and Wear Metro Depot;
2nd to the Stephenson Railway Museum.

- Two workshops will be organized to provide an overview and discuss historical facts and help explain the milestones in the development and evolution of railway freight, passenger and transit systems in Europe and in other continents;

- Two full days of thematic seminars will be organized during which the students will present the results obtained from their research projects and demonstrate what they have learned during the intensive programme. The

students' performance will be evaluated by the Programme Progress Committee (PPC) using a quality assurance guide.

6. Targeted learning outcomes

The targeted learning outcomes of the programme are to develop the undergraduate students' ability to initiate and carry out analysis, research, seminars and workshops and to develop adequate solutions for railway and logistics-specific problems. More specifically, a major aim of the programme is to arm the undergraduate students enrolled on the programme with the skills necessary to pursue employment in the railway and logistics sector after their graduation.

The programme has an emphasis on the growing interest in rail freight, high speed passenger services and international aspect of logistics, which promotes safer and more secure rail transport systems, more mature and environmentally friendly distribution of freight, more efficient railway operations, providing the attendees with the opportunity to view railways and logistics *hand in hand* from a wider perspective and appreciating the increasing importance of European and international multi-modal transport policy for global actions and activities.

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