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on Rail Training
Learning for the future
St.Pölten/Vienna
24 - 26 April 2013

Abstract 1:

Realignment of the Education of Railway Traffic Controllers. Integrationof e-learning and simulation in a blended learning approach

Uwe Hauschild (DB), Sylke Schmidt (DB), Bernd Kiessling (DB)

Abstract Information

Keywords:

Technology,
Simulators,
Multimedia,
Video,
Content Management Systems.

Key lessons:

Simulation, virtual classroom and e-learning components as training units in a learning management system

Enhancement of the professional expertise of railway traffic controllers by use of innovative learning media

Standardised tests of learning success provide evidence concerning the safe operating of interlocking blocks (signal boxes)

Providing for the possibility of training of complex operational situations and disturbance / threat scenarious

Corresponding authors:

Uwe Hauschild
+49(0)16097493718
uwe.hauschild@deutschebahn.com

Sylke Schmidt
+49(0)3412561883
sylke.schmidt@deutschebahn.com

Bernd Kiessling
+49(0)16097470447
bernd.kiessling@deutschebahn.com

Abstract

1. OBJECTIVES OF THE REALIGNMENT EXPERTISE DEVELOPMENT
Enhancement of the expertise of traffic controllers by optimally adjusted simulation systems, e-learning and classroom teaching in education and further training. This innovative approach will result in learning success referring to different types of learners. OPTIMISING THE QUALITY ASSURANCE OF THE LEARNING SUCCESS Automated evaluation of proposed solutions relieves the trainers. Referring to the level of success the trainees get computer controlled suggestions for further action concerning the tasks. The learning platform allows the trainers to focus on the individual interests of the trainees. ASSURING RAILWAY OPERATIONS AT HIGHEST SAFETY LEVEL Realistic simulation systems including a station and tasks related to real life provide for a uniform standard. Additionally local specifics will be taken into account in the training implementation. COST REDUCTION AND EFFECTIVE USE OF HUMAN RESOURCES. Realising e-learning components, the virtual classroom and a web-based interlocking simulation provides for organising learning processes at any place. Travelling costs will be reduced. In virtual classrooms large groups of trainees can be trained.

2. IMPLEMENTATION BASIC PRINCIPLE
The internet offers a wide range of possibilities for organising learning processes on webbased learning platforms: Problem solving can be proceeded iteratively and the evaluation of solutions can be automated. The learning system will automatically provide suggestions for further learning steps. And virtual classrooms prepare the ground for the trainees' working at a problem in direct exchange with trainers. There are also classroom training units for building on the basic knowledge acquired in e-learning modules and for training content for which the support of trainers is indispensable. TASKS AND FUNCTIONS OF THE COMPONENTS LEARNING MANAGEMENT SYSTEM (LMS) A learning platform or LMS is a software for providing learning content and for oganising learning processes. An important element of webbased learning systems is the communication between trainees and trainer. Advantages are the well-ordered flow of information, simplified learning and automated administrative processes. INTERLOCKING SIMULATIONS Modularly designed interlocking simulation systems simulate all functions of interlocking blocks including those of outstations, any train and shunting movements as defined by users. By including a variety of simulated technical and operative disfunctions, accidents and threats it is possible to cover the whole range of railway operations. Trainees can start with predefined cases at any time, railway timetables included. It is possible to store operative acts in the LMS. VIRTUAL CLASSROOM Virtual classrooms are learning scenarios characterised by the use of the internet for the communication between trainers and trainees being physically separated from one another. Learning platforms, webcams, VoIP or even whiteboards provide them with the possibility to see, talk and listen to each other making the common and simultaneous processing of documents and software (e.g. an interlocking simulation) possible.

3. STATE OF DEVELOPMENT
All described components have been tested separately and are in use at various Deutsche Bahn units. For the communication between learning platform and simulation system a software for evaluation and delivery has been developed and tested. An advance version has been presented at InnoTrans fair in 2012.

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Abstract 2:

Skillrail

Manuel Pereira (Instituto Superior Tecnico), *Virginia Infante* (Instituto Superior Tecnico)

Abstract Information

Keywords:

Safety (personal)

Key lessons:

The purpose of SKILLRAIL project is to contribute to European surface transport research program implementation and to the enhancement of the sector by fostering a better match between the human resources needs to make railways a more competitive and innovative sector and the offer of skills coming out of the different research based education and training institutions across Europe.

Corresponding authors:

Manuel Pereira
+35 121841456
mpereira@dem.ist.utl.pt

Virginia Infante
+35 1218417643
virginia@dem.ist.utl.pt

Abstract

Meeting the manufacturers challenges The Railway “Ecosystem” has experienced a drastic evolution during the recent decades, especially the last one: separation of operating and infrastructure activities, R&D activities shifted from the National Operators to the Industry. To answer those changes, the Railway Manufacturing industry has evolved from manufacturing focus to engineering focus incorporating more and more R&D activities. Railway Projects/Contracts are complex ones with the ultimate case of the turn-key project delivered to a customer. It appears that outsourcing the courses to Academia is essentially concentrated on the scientific and technological basis of the topic/domain that are taught. During the last few years, several companies came to the conclusions that there was a need to provide railway expertise to freshly recruited graduate students before their recruitment by Industry. From the survey on the research projects best practices in science and research based innovation have been identified and treated for knowledge transfer processes and subsequent dissemination purposes. Training and Education Activities for High Skilled Jobs Short training for high skilled jobs can be targeted to all kind of railway stakeholders in order develop competences standardized or recognized at international level enabling to comply with EU international requirements and legislation and also with the high tech innovations under development/implementation in railway services. The creation and development of a portfolio of short training courses for high skilled jobs constitutes a benchmark for the rail training system which mainly answers the need of creating professional profiles to operate in the technological changes and in the international legislation and market liberalization under implementation in the railway sector. Four pilot courses are organised and delivered with the titles: 1. “Rolling Stock” 2. “Railway Dynamics”. 3. “Asset Management and Key Performance Indicators for Railways: from superior technical performance to an optimized management of physical infrastructure” 5. “Energy Efficiency Calculator and Energy Efficiency Technical Requirements” an e-learning course. All courses were directed to directed to students starting a postgraduate degree people from the railway industry working in R&D departments directed to Managers in rail companies, Regulators and/or transport ministries (local and national) with an economic remit and PHD/post-graduate students, young researchers in the railway economic studies. Gender issues, equality and education The representation of women in the transport sector is rather low compared with the labour market as a whole. In 2005, only 20.5% of the EU27 transport workforce was women, compared with 43.5% of the total employment. The representation of women in the railway sector is less than 18%. Also the division of labour is clearly gendered. There are a number of resource, interest and justice based arguments for why we need to achieve gender equality in the rail industry: Gender and innovation is a new research area, but both Scandinavian and international studies show that diversity breeds innovation and that the more gender balanced companies are, the more innovative they get.

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Abstract 4:

Good Practice Guide on Competence Development

Priya Shah (RSSB)

Abstract Information

Keywords:

Trainers,
Competences,
Training of the trainers,
Development.

Key lessons:

Background to the GPG (where it comes from, what it's based on, what it comprises of, etc)
Overview of the case studies – topics covered and type of company
Demonstration, using particular case studies, of the use of good practice principles/ theory/ research to analysis, design, deliver, review or assess competence.

Corresponding author:

Priya Shah
priya.shah@rssb.co.uk

Abstract

All Railway Duty Holders in Great Britain are required to make provisions within their Safety Management System (SMS) to ensure, so far as is reasonably practicable, that the competence of all safety-critical staff under their control is developed and maintained to a minimum safe standard (ROGS 2006). Whilst meeting these minimum standards is necessary and important, going beyond the basics and becoming proficient and expert is better. However, this is a challenging demand for those working in the area of training and competence management. Where does one begin when looking to review and update training and competence? What does an effective competence management system look like? If an entire training process needs to be reviewed, how can a company ensure that training needs are adequately defined, training is delivered to consistent standards, assessments are effectively conducted, and the people involved with training and competence have the necessary skills, tools and support to do their jobs? What practical guidance and tested methods are available for developing and reviewing competence? How can competence be maintained and the process continually monitored and updated? The Good Practice Guide (GPG) on Competence Development (RSSB, to be published 2013) has been developed to provide information and practical guidance to anyone who needs to understand, manage or contribute constructively to the analysis, design, delivery, review or assessment of training. It aims to move its users past the minimum standard as required by legislation by providing users with the tools needed to develop effective and comprehensive competence management systems as per their business and individual needs. Using the ORR's RSP1 Developing and Maintaining Staff Competence as a foundation, the GPG reflects the latest developments and thinking around ensuring staff competence. Acting as a reference manual, the GPG pulls together (1) theory and background, (2) evidence-based research findings that highlight practical guidance for readers, (3) details of technology and other relevant media that support the implementation of innovative concepts, and (4) a variety of small and more in-depth case studies, from within and beyond the railway industry, which are real-life demonstrations of good practice in training and competence development. In this presentation, an overview of some of these case studies will be presented to illustrate how different companies have incorporated good practice highlighted in the GPG and utilised approaches that suit their learner and business needs. These case studies showcase innovative thinking and highlight that not only is it possible to meet the standards required by legislation, but also that excellence can be achieved if appropriate time, energy and resources are utilised. It is hoped that the GPG will be a source of inspiration and allow people working in the area of competence to manage the plethora of competence development activities effectively by 'picking and choosing' ideas that are useful and practical depending on their own requirements.

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Abstract 5:

Filling the Void: Meeting the skills shortages in UK rail

Paul Cooper (Young Railway Professionals), *Ruth Cooper* (National Skills Academy for Railway Engineering)

Abstract Information

Keywords:

Ageing workforce/new generation,
Young talent programme,
Social Media,
International Training.

Key lessons:

Greater awareness of the skills shortage facing the UK's railway industry.

Deeper understanding of the variety of industry promotion activities being undertaken with young people.

New approaches for the next generation of young railway professionals becoming part of the skills shortage solution.

Examples of effective recruitment and retention of young people within rail.

Corresponding authors:

Paul Cooper
+44 (0)7767648902
chairman@youngrailwayprofessionals.org

Ruth Cooper
+44 (0)785 2976028
ruth.cooper@nsare.org

Abstract

The aim of the paper is to highlight the skills shortage facing the UK rail industry and to begin to examine possible solutions to that shortage. The first section of the paper therefore will provide an overview of the data that NSARE has been collecting and evaluating over the past six months as part of their Skills Forecasting research. Sponsored by the ORR, NSARE has collated information representing over 45,000 workers in the railway industry and related that to over 180 future development and maintenance projects. This has enabled them to develop a skills forecasting model which will estimate the number of people that the industry is going to need over the next 15 years. The industry's needs have been highlighted in four main areas: Track, Signalling/Telecoms, Electrification/Plant and Traction/Rolling Stock. Within each area, the level of skill needed has also been identified, from the number of semi -skilled workers, skilled workers and junior engineers to professional/senior engineers. What the paper will then do is use this information as a basis for discussing the key shortage areas and the resulting challenges facing the industry. As part of this, the authors will provide a potential response to these challenges by identifying good practise currently adopted by the industry in recruiting and retaining the next generation of railway workers. The Young Railway Professionals (YRP)'s role in bringing young people in the UK railway industry together to facilitate and engage in industry promotion, and early success indicators will be outlined, including the value of collaborative working between young volunteers and a national skills academy. The paper will also incorporate a strategy moving forwards for industry promotion amongst young people as part of the on-going efforts to meet the skills shortage facing the industry. Again the focus will be on identifying good practise and potential avenues for expansion in order to ensure that the UK is well positioned to develop and maintain a 21st century railway.

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Abstract 6:

Innovative Responses to the Challenges of Training for Railway Station Work

Pierre Flicoteaux (SNCF)

Abstract Information

Keywords:

Customer service

Key lessons:

At railway stations, railway companies are dealing with a variety of occupations: people from different sectors – commercial operators, operational staff, construction workers – have to work together. Given these differences, training for railway station work is a special challenge. Facilitating cooperation between different occupational groups, meeting customer requirements, people working in jobs they do not know, …… all that goes beyond the traditional type of training aimed at communicating the competences needed for one particular job. Therefore, innovations are required in terms of the training modules offered, their contents and the didactic methods used. Two examples of successful training for railway station work will be presented: training for station managers and the training course for new staff of Gares et Connexions.

Corresponding author:

Pierre Flicoteaux
+33 624476368
pierre.flicoteaux@sncf.fr

Abstract

At railway stations, railway companies are dealing with a great variety of different actors:

- Commercial operators in contact with clients
- Operators in charge of train traffic or station management, reporting either to the station manager, the infrastructure manager or the companies responsible for train operation
- Operators involved in building management: maintenance, management of rental premises, safety issues (fire protection, environment), refurbishment, construction work. Providing training for all actors involved is a special challenge. Technical excellence in their respective fields of work is considered an indispensable prerequisite. However, training for station work has to go beyond that. The actors concerned need to coordinate their activities in order to render a quality service to clients. Moreover, they have to deal with operators from outside the railway world. SNCF's Institut Gares presents feedback from past experience with two methods suited to address these challenges :
    - The training for station managers has led to a cultural shift from the stationmaster with a « purely operational » focus to the station manager with horizontal objectives (improved real estate management, more effective utilisation of the economic potential of the station, ability to build a network of partners…)
    - The station training programme is intended to familiarise all new staff of Gares et Connexions with their client-related tasks. Thus, participants get to know the reality of work at a railway station and acquire a shared culture of service. This training programme is easy to organise on site at a reasonable cost.

  After this presentation, participants will understand that the specific features of railway stations, as complex interfaces, need to be taken into account in the training offered, which has to go beyond the limits of individual areas of work. Training for station work must necessarily be multi-disciplinary and use pedagogical instruments that encourage networking and the sharing of best practices. The two examples illustrate the success achieved in practical terms. The station managers concerned assumed their new tasks not by learning new skills, but by sharing the challenges to be addressed. The station training programme owes its success to the fact that participants learn to understand the client perspective.

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Abstract 8:

Integrated Education in Railway Systems - An International and Public-Private Approach

Matthias Gather (Erfurt University of Applied Sciences), *Georg Barta* (St.Pölten University of Applied Sciences), *Urs Brotschi* (Zurich University of Applied Sciences)

Abstract Information

Keywords:

Interoperability

Key lessons:

The delegates of the conference will learn about:

The state of general higher railway education in the three D-A-CH states

The close – though independent – cooperation with the national railways

The contents and approaches of the international Master course "European Railway Systems" which is offered by three institutions from DE, AT, and CH

The difficulties and solutions of implementing such an international course (double degree, legal problems between the countries)

The specific added value of such an international course concerning questions of interoperability and international management

The specific didactical approaches of the course ("blended learning", "mutual learning")

Corresponding authors:

Matthias Gather
+49-361-6700654
matthias.gather@fh-erfurt.de

Georg Barta
Georg.Barta@fhstp.ac.at

Urs Brotschi
brou@zhaw.ch

Abstract

In the course of liberalizing European railway markets by European directives many national railways were privatized during the 1990ies. This meant not only the privatization of directly transport related infrastructure and services but also the separation of other only indirectly rail related services. In Germany for example Deutsche Bundesbahn und Deutsche Reichsbahn had run their own institutions for higher education which were successively abolished in the course of privatization. On the other hand no public university offered a possibility to study railway systems as a main subject - higher education was fragmented into various universities with various disciplines. On this background in 2005 FH Erfurt (Erfurt University of Applied Sciences) started in close cooperation with Deutsche Bahn a new three year bachelor course “railway systems” (focused on infrastructure management and – since 2009 – on railway services). This degree course is planned to replace the “Fachwirt” ("Associate’s Degree" as an inhouse degree) but still integrating a 2 years’ vocational training as train directors. FH St.Pölten took a similar approach beginning a cooperation with Austrian Federal Railway’s (ÖBB) main education center situated in the same city by offering a six semester’s Bachelor programme "Railway Infrastructure Technology" from 2008, followed by a Master’s programme with the same focus since 2011. ZHAW School of Engineering in Winterthur (Switzerland) started 2009 with a Bachelor Programme in Transport Systems. Now, starting with summer term 2013 a new international master course “European railway systems” shall be offered. Graduates of this course will have equally studied at FH Erfurt, FH St. Pölten and ZHAW and will have a double degree of FH Erfurt (Germany) and FH St. Pölten (Austria). The course has again been developed in cooperation with the three national incumbent railways DB, ÖBB, and SBB and focuses on questions of interoperability and national benchmarks. In the paper the reasons for the development of this master course will be presented. Furthermore the goals, the target groups, the contents as well as organizational challenges will be dealt with. As the course is not only innovative concerning the subjects, also the singularity of the master course with respect to cooperation and interfaces between the different institutions will be discussed. Finally the paper will not only show the way to and the results of these educational offers, but also draw general conclusions concerning the future of international and public-private cooperation.

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Abstract 9:

Training of Professional Personnel According to the European Standards

Aleksandr Pshin'ko (Dnepropetrovsk National University of Railway Transport), *Borys Bodnar* (Dnepropetrovsk National University of Railway Transport), *Aleksandr Raspopov* (Dnepropetrovsk National University of Railway Transport)

Abstract Information

Keywords:

Trainers,
Competences,
Training of the trainers,
Development,

Key lessons:

Getting and changing of the expirience on training spesialists on international level, to make new cooperation in the field of education and railway transport.

Corresponding authors:

Alexandr Pshin'ko
+38 05 62 36 64 72
foreign_ird@diit.edu.ua

Borys Bodnar
foreign_ird@diit.edu.ua

Alexandr Raspopov
raspopov@rr.diit.edu.ua

Abstract

Training of Professional Personnel According to the European Standards During the period of European expansion and intensification of trade between the countries, the development of rail transport (both passenger and freight) is a major strategic and economic problem. Dnepropetrovsk National University of Railway Transport, along with other universities, railway companies are working out creating of cooperation between the European Union and neighboring countries in the field of education and training of highly qualified specialists for the rail industry in the Tempus program. Project "Master: "Interoperability / Safety / Certification" in international rail transport in Ukraine and Central Asia» (MISCTIF) designed by the team of specialists from leading institutions of higher education and the State Administration of Railway Transport of France, Latvia, Poland, Ukraine, Kazakhstan and Kyrgyzstan. Within the project the new curriculum and the program of training specialists on Master's Degree is constituted. 58 students have training on this specialty, defended Master's theses and received the International and Ukrainian diplomas of the Master. This program completely answers principles of the Bolonsky convention and allows to increase the professional level of specialists in ensuring international carriages on the rail transport. The "Communication and Information Technology for Improvement Safety and Efficiency of Traffic Flows: EU-RU-UA Master's and PhD Programs in Intelligent Transport Systems» (CITISET). The consortium consists of 12 universities (4 - Russia, 4 - Ukraine, 4 - EU), which cover four types of transport: air, sea, rail, road, and one industrial company - Russian Institute of Radio navigation and Time. The purpose of the project. Development of Master's and PhD Programs in the field of intelligent transport systems in the Russian and Ukrainian universities according to EU standards and the requirements of the Bologna process. Each university that participates in the project, set up an educational center for student including modern computers, software, systems, navigation equipment, and electronic versions of the documents, manuals, tutorials and laboratory work. The project will allow to train graduates who are able to use the high-level communication technologies to ensure the safety and efficiency of traffic flow and get Master's Degree of Ukrainian and Russian universities and the EU. Our university began to work on "Master of the infrastructure and exploitation of high-speed rail in Russia and Ukraine» (MieGVF) together with partners from France, Latvia, Poland, Russia and Ukraine. The project provides: to develop new course and teaching, according to the Bologna process, training of specialists in the field of satellite infrastructure and operation of high-speed traffic. The graduates receive two Master's Degree: international and Ukrainian. The overall objective of the projects meets the strategic development of the railway industry in the country. Therefore all of them are well adapted to the external factors, the expected results are relevant for high school. The great number of issues that have recently been actual for university, dedicated exactly the Bologna process. In this direction, the learning process at the university organized according to current state requirements, regulations MES with the requirements of the Bologna process.

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Abstract 11:

Competence Orientation

Christof Spoering (login Berufsbildung)

Abstract Information

Keywords:

Training innovations (methods).

Key lessons:

login presents:

the re-definition of train driver training on the basis of a strictly competence-oriented training framework;

the role of validated work situations as a basis for competence-oriented teaching and for the exam;

the optimum alignment of teaching, practical work and the competence check (exam).

Corresponding author:

Christof Spoering
+4179 223 15 78
christof.spoering@login.org

Abstract

Since September 2012, login has been implementing an educational concept with a strict competence orientation. The study course for public transport specialists and the training programme for train drivers are now guided by 4 didactic principles. Based on real work situations, theory is being combined with practical training and the competence check in a consistent and transparent manner.
In the past, train driver training was subdivided by subject matter, usually based on standard operating procedures. The blended learning approach, including classroom teaching, simulation and e-learning, was based on small-scale modules, with strongly trainer-centred classroom teaching. As teaching material had to be provided in three languages, data management was getting more and more difficult.
The new concept is based on 4 didactic principles. The educational process was redesigned and teaching aids and templates were developed. The concept is focused on the competence-based transfer of knowledge to the work environment of the participants; new media are being integrated to support the learning process and provide an additional learning platform. For login, it serves as a basis for the sale and the development and implementation of all its training and further training offers. The concept comprises five phases:

- Phase 1 serves to establish the competences to be acquired. These are based on work situations validated by experts.
- In phase 2 standard operating procedures and regulations are dealt with, broken down by work situation, and essential content is developed in the form of modules and/or instruments to control the learning process.
- In phase 3 standard operating procedures and regulations, modules and horizontal instruments are combined into an overall set of measures and adjusted to client requirements.
- In phase 4 implementation of the measure is planned on the basis of clearly defined roles.
- In phase 5 attainment of the competences identified in the course of the educational needs analysis is verified.

In close cooperation with SBB (Swiss Railways), the entire training programme for train drivers was redesigned and focused on specifically defined competences. The training course and the exam are based on an obligatory set of the most important work situations. Each module relates to a clearly defined competence, which is being developed through structured preparation, classroom teaching and practical application. Interactions between theory and practice are particularly important. Based on a clear division of roles, tasks and competences are assigned to SBB and login. Practical training has been upgraded through the specification of obligatory requirements and the introduction of the training monitor. All learning materials are developed centrally and made available in a library of materials and/or as part of the e-learning tool. A learning management system serves as a central communication hub for all those concerned. This is where the practical training monitor from SBB acknowledges attendance of his exercises and the results of exams taken in the classroom and in e-learning are recorded. Thus, the line executive from SBB and the person in charge of implementation at login are always up to date. Training concepts have been developed and implemented for all roles, including developers and trainers. It turned out that more demanding requirements have to be met by developers and education managers. They need new skills not only to perform organizational tasks, but also to deal with the learning platform and fulfill their roles as coaches and moderators.

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Abstract 13:

Redesign of Railway-Specific Occupations at the Austrian Federal Railways

Stefan Meerskraut (ÖBB), *Georg Barta* (St. Pölten University of Applied Sciences)

Abstract Information

Keywords:

Training innovations (methods).

Key lessons:

Yearly requirement reports of the different business companies at the Austrain Federal Railways show a deficit of qualified persons for railway specific professions. New apprenticeship training methods for railway specific professionals were developped in order to compensate this deficit. This reform of apprenticeship education made it necessary to initiate a private vocational school. Costs and advantages of this railway specific vocational school will be discussed.

Corresponding authors:

Stefan Meerskraut
+43 6764938632
stefan.meerskraut@gmx.at

Georg Barta
+43 2742313228711
georg.barta@fhstp.ac.at

Abstract

The Austrian Federal Railways are one of the largest apprenticeship companies in Austria with currently 1881 apprentices graduating. The demand for railway specific tasks has increased in the last few years. Due to yearly requirement reports of the different business companies a deficit of qualified persons for railway specific professions could be shown. Since September 2010 apprentices could be trained in six different special modules for railway specific know how. Due to the legal validity of the electronical engineering by-law at 1st of June 2011, a seventh module, railway telecommunication engineering, is trained. All seven railway specific special modules, integrated in the apprenticeship modules electrical engineering and electronic engineering, were developed in cooperation with the social partners, ministry of economics and representatives of the Austrian Federal Railways. Thus, an apprentice is first three years and a half trained at his major apprentice profession and further half a year trained at one of the seven special modules. Since laws in apprenticeship education foster a dual education, a vocational school is required for the special modules. However, none of the existing public vocational schools in Austria is qualified for this special education. Therefore the Austrian Federal Railways decided to initiate a private vocational school for railways specific apprenticeships. Thus, education costs for railways specific qualified persons can be reduced and different business companies within the Austrian Federal Railways can choose the best relevant qualified persons. Apprentices have the advantage to specialize much more earlier in their favourite profession during their education. Costs and advantages of this railway specific vocational school will be discussed. Future will show if this new training concept of railway specific professionals is successful. However, it is sure that the creation of seven railway specific special modules is an important step forward in order to make apprenticeship training more flexible and modern.
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Abstract 14:

Harmonisation of ECVET-based Railway Training at EU Level

Murat Seneken (TCDD), Mehmet Ektas (TCCD), Recep Unluer (TCCD), Sedat Guneyparlak (Ministry of National Education)

Abstract Information

Keywords:

Competence assessment (examination).

Key lessons:

Introduce the project outcomes.

Corresponding authors:

Murat Seneken
muratseneken6006@gmail.com

Mehmet Ektas
+90 53252142
mehmetektas@tcdd.gov.tr

Recep Unluer
recepunluer@tcdd.gov.tr

Sedat Guneyparlak
sguneyparlak@meb.gov.tr

Abstract

Despite the huge international transportation activity by sea, air, road and rail, the rail training centres appear to be very national oriented. The European Commission has an important recommendation to create a European Railway Area by 2020 to be based on cross border ''interoperability''. However, Interoperability cannot be regarded as only a technical issue, since it is also a question of integrating national rail systems by harmonising the railway training at EU level. European Railway Area by 2020 requires cross-border operations not hampered by diverging national staff requirements and standards necessitating the change of train drivers and crew every time a train crosses a border. The European Parliament and the Council has also another Recommendation dated 18 June 2009 (2009/C 155/02) on the establishment of the European Credit System for Vocational Education and Training – ECVET and on its implementation in EU as of 2012, which could be another tool for the harmonisation of national training systems and mobility of the railway staff. However, implementation of ECVET and “mobility” is not currently at desired level in the railway sector in the European Union. In addition to the ongoing EU initiatives like “common licensing regime for train drivers”, The European Commission has so far supported a number of projects carried out within the Lifelong Learning Programme, the two of which are “Developing Educational Programme for Railway Systems and Technologies – DEPRAST (2005–2007) and “Joint Initiative in Vocational Education and Training – JIVET (2008-2010)”. In the 2010 call period, a development of innovation project titled “Railway Operation in ECVET – RAILVET (2010-2012)” was found to be eligible to be supported by the LLP-Leonardo da Vinci Programme of the European Union.
(1) Ministry of National Education, DG-VET (Turkey)
(2) Turkish State Railways (Turkey)
(3) HAK-İŞ Confederation (Turkey)
(4) International Union of Railways (France)
(5) The National Institute of Technical and Vocational Education (Czech Republic)
(6) Italian Shipping Academy Foundation (Italy)
(7) Nautical School “San Giorgio” (Italy)
(8) Foundation For Vocational Education and Training Services (Slovakia)
Working together with also some external railway experts from Finland, Germany, United Kingdom and Australia outside the partnership, the project consortium developed a training programme for the “operation” railway job family which is also adapted to the ECVET system. The final product of the project will be released on its website www.railvet.com for voluntary and free use of the formal and non-formal railway training institutions, centres and railway companies in the European Union. The Second UIC World Congress on Rail Training will be a good platform for the project partners to introduce the project outcomes and negotiate the possibility of pilot implementations among railway companies to test the training programme developed.
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Abstract 15:

Simulation Technology - Innovation in the Field of Railroad Training

Amit Kumar Jain (Delhi Metro Rail Corporation)

Abstract Information

Keywords:

Training innovations (methods).

Key lessons:

Innovations in training methods

Trainer's training- best practices

Use of technology in training

Best practices in Simulation based training

Training for young employees

competency building for taking up higher responsibilities.

Corresponding author:

Amit Kumar Jain
+91 9650198665
jainakirts@yahoo.co.in

Abstract

Simulation technologies are perhaps the most effective tool of training in the fields when it is prohibitively expensive or simply too dangerous to allow trainees to use real equipment in the real world. In such situations, through use of simulators, people can be trained in a 'safe' virtual environment with 'real-life experience. This provides the scope of committing mistakes and learning from them during training, which otherwise could have caused harm, especially for a safety-critical system. Simulation is often used in the training of civilian and military personnel. Recently Simulation techniques are increasingly being used for training of railroad personnel- train drivers, dispatcher, engineers largely due to effective training, availability of real life simulation solutions and advent of highly advanced computer based graphical interfaces. These "virtual" simulations (where actual players use simulated systems in a synthetic environment) are found to be more appropriate for Railroad sector. Delhi Metro Rail Corporation is one of the latest medium size metro systems in the world, commensed operations in year 2002, with 167 kms of track length, 135 stations, 6 lines under operations in Delhi- the capital city of India. DMRC operates around 2700 trips daily carrying an average ridership 2.0 million per day. There is around 6000 staff engaged in operations and maintenance activities to ensure almost 100% on time availability of train services. The training of these 6000 staff has been an uphill task and a formidable challenge for DMRC. The challenge is compounded by the fact that we did not have any successful metro system of this magnitude in India earlier and the average age of our staff is just 23 years- quite young. We had the choice of either learning by doing and making on the job mistakes or adopting innovative simulation techniques for training our staff. Needless to mention that learning by doing/making mistakes was not a desirable option for a mass transit system offering critical services to 2 million passengers per day. Any human mistake by untrained staff has the potential to throw the normal life of the capital city of India out of gear. Simulators are playing a key role training of O&M staff be it in the field of train operations or system maintenance. Over the time we have incorporated following 10 training simulators in our training school: Two Driving simulator (for two types of rolling stock) for training of train operators Automatic Train Supervision (ATS) simulator for signaling system Trouble Shooting and Maintenance Simulators (TSMS) for Heating Ventilation Air Conditioning (HVAC), Propulsion System, Auxiliary supply system, Door system, Brake system, Air Supply system, Train Control & Management System (TCMS) Further, we are in the process of setting up simulators for traction power supply, advanced signaling system and escalator system. DMRC is able to impart proficient training to its operations staff along with substantial saving in cost of training, man hours, electrical energy and consequent reduction in green house gas emission. This paper discusses the experience of DMRC in incorporating simulation technologies in the railroad training, customization of standard simulation products to suit our requirements and how DMRC has leveraged these technologies in moulding our young staff into well experienced, highly trained and confident personnel. DMRC is able to achieve 99.8 % punctuality in train operations largely due to comprehensive real life like training imparted through our various simulators. It is a success story of training simulators in the field of rail road operations in India.
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Abstract 16:

Platforms for Railway Sector Growth

Per Olofsson (Bombardier Transportation)

Abstract Information

Keywords:

Ageing workforce/new generation
Young talent programme
Social Media
International training

Key lessons:

The challenge to attract young people to the Rail sector.

The need to introduce, build and support Rail programs and courses at Universities and Schools.

How a cross functional forum - a Rail Skill Forum contributes to this quest

Corresponding author:

Per Olofsson
+46 108525092
per.olofsson@se.transport.bombardier.com

Abstract

In many disciplines the Railway sector has difficulties to attract competency and fill vacancies. Stake holders are overbidding to get already competent resources required to carry out tasks. Young people are not really interested to “work with trains”. They are geared towards e.g. developments of IT, media and designing games for PC and other game consoles. It is a challenge to communicate to young people that the Rail sector is a High Tech environment indeed, using most advanced technologies. New technologies are being introduced, new rail and mass transit projects are being launched all over the world and the “old and experienced guys” are about to be pensioned. Is there a shortage of skilled resources? It is time that the Railway sector takes up the initiative to solve the resource situation. Who else will do it for us? Bombardier Rail Control Solutions has for two decades worked to facilitate and provide support on University as well as Vocational school level such that more students has been attracted to a career in the Railway Sector. Using our Training Academy, skilled and knowledgeable staff and product platforms as a firm basis we are in position to support these schools. We have taken initiative in setting up a cross-functional forum on a national level to create a dialogue which aims to contribute to better education and support the schools with Railway related subjects. How is it done and what are the challenges?
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Abstract 18:

Human Factors in the Development of Railway Safety Competences

Stella Duvenci-Langa (SNCF), Laurent Karsenty (ErgoManagement), Marine Salome-Martin (SNCF)

Abstract Information

Keywords:

Non-Technical Skills

Key lessons:

Non-technical skills

Railway safety

Participation

CRM

Corresponding author:

Stella Duvenci-Langa
+33 01 53 25 37 02
stella.duvenci-langa@sncf.fr

Laurent Karsenty
+33 0687709248
laurent.karsenty@ergomanagement.fr

Marine Salome-Martin
+33 0180462658
marine.salome-martin@sncf

Abstract

This presentation deals with a training approach focused on human factors, which was originally designed for the aeronautics industry and has recently been applied in the railway sector. After a series of severe accidents between 1985 and 1989 (Flaujac, Gare de Lyon, …), the safety-related measures taken, including a special focus on human factors, resulted in a significant reduction in the number of accidents. However, the current level of safety, though satisfactory in general, has reached a stage where a general weakness becomes apparent: the limits to what can be achieved through the classic approach, such as re-training, stricter observance of rules, information and sanctions of individual or collective behaviour of the type that plays a crucial role in many of the incidents occurring. In 2009, the Safety Directorate of SNCF reacted to this weakness by introducing CRM (Crew Resource Management). Its main purpose is to improve operational safety. Its impact is to be felt at three levels of the company:

- At the individual level, individual awareness of internal and external risk factors is to be strengthened.
- At the collective level, performance is to be improved through more effective communication and cooperation.
- At the organisational level, safety management is to be improved through mutual trust and communication between operational staff and executives.

As a first step, safety-related topics to be included in the training programme were identified; subsequently, training material was developed by professional experts, operational staff and a specialised external consulting office. The didactic approach was focused on six issues: risk awareness and risk management, managing mistakes, uncertainty and attention, cooperation and communication. CRM training takes place in the form of interactive sessions on two consecutive days. The sessions are moderated by two people each, who have already been trained. They include structured discussions on the practical experience of railway personnel, enriched through concepts and knowledge intended to broaden the participants' understanding of the overall system. Through this training method, crew members are encouraged to reflect on their own function and their position within the group, thus developing a critical view of their individual and collective behaviour. After a successful trial phase at several sites in 2009/2010, the CRM approach is about to be introduced progressively upon the request of the various business units. By the end of 2012, over 1.000 staff members will have been trained. The results achieved show a high degree of satisfaction among both staff and executives, changes in behaviour and the evolution of a safety culture among the staff concerned. In parallel with CRM training for staff, CRM training for executives is about to be introduced. The impact on safety-related incidents cannot yet be quantified, as final conclusions can only be drawn when 100% of the target population have been exposed to the training.

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Abstract 19:

Platforms for Railway Sector Growth

Michael Rafferseder (ÖBB)

Abstract Information

Keywords:

Skill fade
Periodic training
Assessment

Key lessons:

How to manage the periodic-training so that you can be sure, that each employee gets the periodic training he needs. How to implement a form of examination that periodically checks the skills of the above employees.

Corresponding author:

Michael Rafferseder
+43 6646173985
michael.rafferseder@oebb.at

Abstract

During the last years Austrian railways (we) set substantial measures to fight skill fade of employees with safety related jobs (e.g. signaler, shunter, train driver). The result of these measures is, that the management can be sure (and is able to prove), that each employee gets the periodic training he needs to preclude fade of skill and to keep him up to date regarding changes of processes or standards (e.g. rulebooks). In addition to that we implemented a form of examination that periodically checks the skills of the above mentioned employees. The first step on the way to this result was to set up a classification of safety related job profiles. Then the necessary elements of annual periodic training for each job profile were defined. Theses core data were integrated in our Enterprise-Resource-Planning-System (ERP). The second step was to assign each employee to one (or more) of the above mentioned job profiles and to document this in the ERP. As a result of these two steps we (and the ERP) know, which elements of periodic training each employee (appropriate to his job profile) has to fulfill. The periodic trainings are performed by special trainers. And only after one of these trainers confirmed the participation, this confirmation is recorded in the ERP as a fulfilled element of periodic training. So at any time (and especially at the end of year) we can easily report, which employees fulfilled all necessary trainings and which employees missed training. In the next step, the system was complemented with a web tool for trainers, to manage the dates of periodic training and to confirm the participation of the employees online. This was an essential step forward, because before that, the trainers had to send hardcopy lists and someone had to input the lists in the ERP (which sometimes turned out to be a source of error). The next goal was to implement a periodic check of competences. Therefor we developed an E Testing Tool. The core of this tool is a database containing questions and answers. And these questions are tagged to the above mentioned job profiles. That gives us the ability to generate tests out of the database, which focus on the relevant job profile. So when an employee sits in front of a PC, the ETT selects per random generator a certain number of questions, which are appropriate to his job profile and presents them to the employee. The results are determined by the ETT and sent to the ERP. It's sent to the ERP because the testing is a defined element of periodic training which has to be fulfilled. With this ETT we are able to check periodically (or if necessary ad hoc) the competences of an employee regarding his job profile(s). By introducing this new business process we eliminated some sources of error in the testing and evaluation process and the system turns out as a benefit for all employees. A modern basis for further exams and trainings was created and can be directly used in future.
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Abstract 22:

Beyond Training to Workforce Development: Trainers as leaders in a 'learning for the future' context

Roger Harris (University of South Australia), *Tom Short* (University of South Australia)

Abstract Information

Keywords:

Trainers
Competences
Training of trainers
Development

Key lessons:

At the end of this presentation delegates will:

Gain new knowledge from major Australian research on the transformation of workplace trainers and training managers to become future orientated leaders of workforce development and change.

Hear about how a traditional but diverse industry collaborated on a range of education and training projects to create a unified and integrated program of workforce development Align the work of workplace trainers with contemporary organisational issues such as the attraction, engagement and retention of talented people.

Corresponding author:

Roger Harris
+61 08 8302 6246
roger.harris@unisa.edu.au

Tom Short
+61 08 8302 5421
tom.short@unisa.edu.au

Abstract

In a knowledge economy, the role of the trainer is necessarily expanding. The trainer, and especially the training manager, is increasingly being transformed into a leader. Such a shift requires a significant change in mindset: thinking beyond training (e.g. a workplace and classroom focus) to workforce development (e.g. an organisation, sector and even national focus). Training is still critically important, and has served us well in the past, but … In thinking about and preparing for the future, the trainer needs to engage like a leader, think more broadly than training and be proactive within a workforce development paradigm, if the focus is to move more towards Learning for the Future. Workforce development is a relatively new concept that extends beyond training, and is increasingly used by educationalists, policy-makers and scholars. It draws on human resource development and workforce planning, and is often highlighted in debates on skills shortages where there is a need to increase the pool of skilled workers in critical industries. It has been said that the concept takes us in new directions. Many still have a limited view, perceiving it as
(a) identifying and filling current and future jobs in an organisation, or
(b) professional development – the training of individual employees, or
(c) technical education and meeting skills shortages.
The difficulty with such lack of focus is that it has resulted in ad hoc approaches that have not been integrated within and across organisations and therefore tend not to be sustainable. Workforce development can be viewed as an umbrella term for a wide range of strategies, activities, policies and programs that organisations can put in place to support them shifting from where they are to where they want to be in the future. In this paper we analyse what this shift implies, drawing on our research in the Australian Rail Industry and illustrating how we have been endeavouring to foster this shift beyond training to workforce development within the CRC for Rail Innovation. This CRC is a consortium of rail organisations and universities collaborating in a seven-year program of research (2007-14). Within it, there is what the Australian Government labels an 'Education and Training Program' but which we have re-named a 'Workforce Development Theme'. The presenters are the Theme Leaders, overseeing 22 research projects being undertaken by various combinations of researchers from six universities, in conjunction with a number of rail companies, which are participating in the CRC. The paper draws on (a) data from one of the projects (on leadership and management in rail) that exemplify the need for trainers to see themselves as leaders, and (b) discuss a number of examples of other projects that pertain to workforce development. In these projects we highlight what was perceived to be the initial issue or problem, and then explain how this issue was tackled from an organisational and/or industry-wide perspective.
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Abstract 24:

Matching Mentoring Partners through Technology in Australian Rail

Janene K Piip (University of South Australia), *Thomas W Short* (University of South Australia)

Abstract Information

Keywords:

Technology,
Simulators,
Multimedia,
Video,
Content Management Systems.

Key lessons:

Hear about unique perspectives of mentoring approaches in Australian rail organisations using technology to match mentoring partners. Gain insights into how the loss of corporate knowledge can be arrested early with these unique approaches through the presentation of an in-depth case study in a large rail organisation. Apply learning from research in Australian rail organisations to individual rail contexts.

Corresponding author:

Janene K Piip
+61 488428824
piijk001@mymail.unisa.edu.au

Thomas W Short
+61 08 8302 5421
tom.short@unisa.edu.au

Abstract

Australian industries are following world-wide trends as the global marketplace forces organisations into unchartered territory, redefining what it takes to succeed. However, many organisational workforces comprise a large cohort of older, experienced employees and a new pool of younger, inexperienced employees that are both larger than the shrinking middle sector. The rail industry is no outsider in this regard, feeling the squeeze of shifting age demographics at both ends of the spectrum. The newly realised consequences of these technological, global and demographic phenomena on business agility have sparked a range of Human Resource Development initiatives such as formal workplace mentoring, witnessed across the board in the rail and other industries in Australia. These initiatives are seen as a panacea to achieving new business success but some organisations have found that if programs are ill-thought through, they may result in less than perfect outcomes. Research by the CRC for Rail Innovation in Australia on workplace mentoring has identified a number of innovative approaches being undertaken by rail organisations to address these issues. Mentoring programs have been developed by organisations to solve several business needs as the pace of change increases, the older generation departs the organisational workspace and the younger generation comes on board. Savvy organisations have realised that both generations have much to offer – to the organisation and to each other – but neither have all the answers by themselves and the input of each other's unique perspective of the world in these new environments is necessary for effective business outcomes. Applying these principles to mentoring programs using technology has been a business revelation for organisations which have geographically dispersed locations and functions. Technology has been a key enabler in the Australian rail industry to facilitate business across vast distances and its ability to complement and develop the human aspects of the organisation through mentoring has only started to be realised. This paper explores one rail case study in detail, where technology based solutions have been implemented to develop connections between mentors and mentees in a number of innovative ways. These connections have assisted in addressing the impacts of the older generation leaving the rail workforce with considerable wisdom, tacit knowledge and experience that is not captured, leveraged or shared. The loss of this specialised knowledge is a growing concern for Australian rail organisations as the new generation of younger more 'tech savvy' and professionally educated employees comes on board. What knowledge has been valued by older leaders in leading the organisation in the past may not necessarily be prized by the new generation and vice versa. However, this mentoring case study describes how a technology focussed approach to a mentoring has assisted in developing a common organisational ground for a successful HRD initiative. In this case study, different perspectives on seeing the world - common or different to each generation - are acknowledged and discussed by mentoring partners for the betterment of organisational outcomes.
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Abstract 25:
Building Leadership Capability Down-Under: Hard shell, soft centre

Tom Short (University of South Australia), *Roger Harris* (University of South Australia)

Abstract Information

Keywords:

Non Technical Skills

Key lessons:

At the end of this presentation delegates will:

Gain new knowledge from major research on how the Australian rail industry is developing leadership talent for the future.

Learn about the 'rail-centric' leadership capabilities most valued by rail managers.

Discover how self-awareness development aids leadership capability.

Evaluate how workplace mentoring and coaching techniques in the rail setting can supplement traditional approaches to training leaders.

Corresponding author:

Tom Short
+61 08 8302 5421
tom.short@unisa.edu.au

Roger Harris
+61 08 8302 6246
roger.harris@unisa.edu.au

Abstract

In many countries, rail industries were created on a leadership style of male-dominated toughness and technical bias, especially so in Australia where rail organisations in each State have historically played a pioneering role in building infrastructure and generating economic success. What it means to be an 'Aussie bloke' is embedded deeply in the rail environment and over the years these characteristics have included: egalitarianism, individualism, mateship and a humane orientation, but discrimination in various forms. However, in a global economy, the Australasian Railway Association (ARA) reports that many of these older values belong in the past and are no longer appropriate in a modern rail culture - so Australian leaders must learn to adapt. Leaders shape the culture of an industry, but as the influence of globalisation takes hold, Australian rail organisations are facing an impending shortage of talent, more diverse workforces and the increasing need to connect with customers. In these new settings, older approaches to leadership are thought to be counterproductive and rail leaders have come to realise that soft, non-technical skills are now playing a vital role in delivering change. Non-technical skills are thought to include, but are not limited to: situational awareness, workload management, decision making, conscientiousness, communications, working with others, and self-management. Moreover, in a global environment where a shortage of leadership talent is reported to be a major issue, and specifically in Australia where dissatisfied employees flock to booming industry sectors such as mining, rail leaders are increasingly turning to non-technical or soft skills to enhance workplace relations, build performance and secure employee retention. However, before leading others, modern leadership development requires self-awareness and the ability to lead oneself in a given situation. Self-awareness is probably the most underrated aspect of leadership development programs, yet a new framework developed for the Australian rail industry identifies six areas where managers could improve their leadership behaviour and in doing so get the most from other people. These six areas align with the key facets of leadership most commonly featured in many competency frameworks. They include a balance of hard and soft skills in much the same way as Chinese people talk about Yin and Yang. This paper draws from a major research program conducted in the Australian rail industry between 2008 and 2011, under a Commonwealth-funded Cooperative Research Centre (CRC) for Rail Innovation. Drawing from in-depth research in several major Australian rail organisations, the findings reveal how the non-technical capabilities, particularly among middle managers, can play a major role in ensuring workplace harmony, productivity, employee wellbeing and commitment to an organisation's vision and values. Furthermore, in larger Australian rail organisations, where executives can easily become detached from the front line, middle managers are using a blend of hard and soft leadership capabilities in training, mentoring and coaching to engage front line supervisors. In Australia, front line managers are the largest yet least qualified cohort of all rail leaders and openly seek support and guidance from significant others, usually the middle managers.
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Abstract 26:
EnerSim: A Training and Competence Assessment Simulator for Railway Energy Management Systems

Francisco Javier Sanchez Bolumar (ADIF), Rafael Tortosa Belda (ADIF), Jose Maria Perez Morant (ADIF)

Abstract Information

Keywords:

Technology,
Simulators,
Multimedia,
Video,
Content Management Systems.

Key lessons:

Software simulation of real world scenarios: less expensive and more portable.

Offline mode as a work tool (direct impact - economic benefits) and online mode for integration on LMS (powerful tool for training and assessment).

For including on classroom, blended and online training and assessment programs.

Corresponding author:

Francisco Javier Sanchez Bolumar
+ 34 963357133
jsbolumar@adif.es

Rafael Tortosa Belda
+34 963357307
rafaeltortosa@adif.es

Jose Maria Perez Morant
+34 963357151
jmpmorant@adif.es

Abstract

EnerSim is a training simulator for railway energy management systems. It is a full software solution based on XML and Adobe Flash standard programming developed by ADIF with own internal resources. EnerSim implements an SCADA graphical user interface and an internal engine to run simulations of real world scenarios including operational conditions, safety restrictions and intelligent incident generation. It is an excellent environment to train system operators and maintenance technicians on classroom, blended and e-learning courses and also to support them on daily job. Both applications improve management and troubleshooting process and maximize efficiency, facilitating to make right critical decisions faster. It supposes a positive direct impact on service quality and maintenance budget. Last year participants reduced an 80% their own mean time for operations. This implies important economic benefits due to train delays reduction and network reliability improvement. EnerSim is fully portable and it can run exercises offline or online. Offline mode is suited as a work tool for safety purposes, because maintenance team can identify dangerous high voltage zones running EnerSim on his notebook before to initiate maintenance tasks. Online mode through any Internet navigator facilitates the integration on corporate e-learning platforms for two main purposes: the former, online training for saving costs on logistics and classroom special hardware equipment and for getting a global impact on employees, and the latter, online evaluation of technical competences and human factors, through integration of a tool for building training scenarios, recording operation and timing and matching to best practices for evaluating results and troubleshooting sequences. EnerSim is in constant evolution. First version only included DC conventional line scenarios. Last version can integrate conventional line and AC power high speed line mixed scenarios. Now Enersim can be customize to simulate any real railway energy infrastructure in the world for training and support. Our ultimate efforts are focused on developing a new version to support another types of technical installations: signaling, telecommunication, sensors, etc.
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Abstract 28:
Implementation of a European Train Driver Licence - Overview on experiences, challenges, weaknesses 5 years after adoption

Olaf Mette [(ERA)]

Abstract Information

Keywords:

Competence assessment (examination)

Key lessons:

Summary of experiences.

Showing results, about figures and facts so far.

Corresponding author:

Olaf Mette
olaf.mette@era.europa.eu

Abstract

Directive 2007/59/EC was adopted end of 2007. By the time of the congress it will have been on the market for more than 5 years. Time to summarise experiences of this first period. Regarding implementation in Member States, the supporting projects and there results, about figures and facts so far. But as well about strengths and weaknesses, about needs to further develop or to improve the model. The Agency will provide a first report on the implementation of this new European measure by October 2013. This will be the place for stakeholder to express there different views from the perspective of a public administration, an operating company or as a train driver. The Agency currently starts preparing for the collection of the respective information. Training and competence assessment are by nature core items for all staff certification systems. To get an update on the process of implementation, on the state of current use of the new system, on the feedback we received from the market might be of interest for congress participants involved in train driver training and competence management. On the other hand congress members might as well contribute with aditional ideas, views, oppinions concerning training and assessment to the report of the Agency to be submitted to the Commission by October 2013 and became part of the process of further development of the train driver certification system. I would suggest considering this subject rather as part of more general presentations then as a workshop.
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Abstract 29:
Generic Security Training for Improving Public Transport Security – the SECUR-ED Approach

Christian Maag (University of Würzburg)

Abstract Information

Keywords:

Training innovations (methods).

Key lessons:

Knowledge about security issues in public transport (from daily issues to terrorist threats)

Learning how training measures could improve security Information about how to approach this challenge by using generic training lessons, exercises and campaigns

Learning about the topics and target groups for security training in public transport Introduction to biggest EU FP7 security demonstration project "SECUR-ED"

Practical examples for generic training lessons developed within "SECUR-ED"

Corresponding author:

Christian Maag
+49 9313182613
maag@psychologie.uni-wuerzburg.de

Abstract

The SECUR-ED Project is the biggest EU FP7 security demonstration project (40 partners, €40 million budget) with the objective to provide a set of tools to improve urban public transport security. The project started with the users' (Public Transport Operators and passengers) needs and does not focus only on major terrorist threats, but also on daily security issues such as vandalism and the passengers' feeling of security. The developed and demonstrated tools range from risk assessment to technologies (e.g. innovative CCTV) to complete training packages. The results of the project are actual tools and solutions that can be implemented in present day transport systems in medium and large cities across Europe. This implementation is demonstrated in four demonstration cities (Madrid, Paris, Milan and Berlin) and by means of further "satellite" demonstrations in other cities. The paper presents one of the capacities developed and demonstrated within SECUR-ED, namely training. In order to improve urban transport security, more than 20 training lessons are being developed. The topics range from preventive aspects to the management of security incidents, and are grouped by the following domains:
(1) Security and risk management in public transport,
(2) Security operations planning,
(3) Security operations, preventive behaviour and immediate actions,
(4) Conflict management,
(5) Communication and cooperation,
(6) Security practice,
(7) Operating security systems, and
(8) Emergency and crisis management.
The titles of two exemplary training lessons are "Identifying and handling persons based on suspicious behaviour, appearance & findings" and "Dealing with stressful and extreme situations – under routine, and mainly under emergency conditions". The training courses target front-line employees (e.g. drivers of vehicles, in-vehicle service staff, ticket inspectors, station service staff, cleaning staff), security staff (e.g. in-house security staff, security services provider's staff), operators of security control rooms and security managers. Although many lessons are intended for classroom instruction, there are also computer-based trainings, practical exercises and public awareness campaigns. Due to the fact that the threats as well as the security-related rules and procedures differ from city to city, the lessons are as generic as possible. An integrated competence and training framework supports interested Public Transport Operators who want to use the training lessons. The lessons are as easy to use as possible. Nevertheless, they are not ready-to-use solutions, because some adjustments to the individual requirements of each operator are needed for demonstration and later application. These adjustments include the translation of the training material from English into the language of the operator, the selection of trainers and conducting a train-the-trainer session. During the SECUR-ED project, a set of complementary security demonstrations is organised, validated and assessed on the basis of a set of identified protection scenarios specific to public transport. The developed training courses are mainly demonstrated by Deutsche Bahn in Berlin. But also other public transport operators participating in the project will show the valuable contribution that training can give to enhancing security in public transport systems.
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Abstract 30:
A Framework for Integrating Non-Technical Skills in Competence Management Systems

Kate Bonsall-Clarke [(RSSB)]

Abstract Information

Keywords:

Non Technical Skills

Key lessons:

The importance of non-technical skills in the competence management system.

How the Action model can be used as a framework to establish.

How NTS relate to technical tasks, can be measured in recruitment.

How NTS contribute to incidents and accidents.

Corresponding author:

Kate Bonsall-Clarke
kate.bonsall-clarke@rssb.co.uk

Abstract

A technical task, like train driving, requires a practical understanding of the relevant techniques, procedures, roles and responsibilities, all of which are formally assessed to ensure the person can carry out the safety-critical task. But apart from that specialist, technical knowledge, safety-critical staff will also draw on non-technical skills to carry out a task. These include the ability to take in information, focus, and take decisions, and the way we communicate with others. NTS play a vital role in safety by helping people to anticipate, identify and mitigate errors. Reviews of incidents and accidents in the industry have shown consistently that where NTS are lacking, the ability to prevent and mitigate errors is compromised, and so contributes to incidents taking place. NTS have been a key focus in other safety critical industries for many years. By taking a proactive approach to NTS development, and integrating NTS into competence management systems and training programmes, it is expected that safety will improve. In 2011, RSSB piloted two non-technical training skills courses (one for drivers and one for their managers) that had been developed with training representatives across the rail industry in Great Britain. The courses were evaluated over three time points using a range of self-report and observational measures. Significant improvements in NTS and managerial skills were found, adding to the limited but growing body of knowledge on the evaluation of such courses. The training materials have now been released to RSSB members for their use in training and developing their staff. Existing evaluation evidence suggests that significant benefits can be achieved, provided that NTS are integrated effectively into competence management systems. As well as having a positive culture towards NTS across an organisation, a consistent approach is required, with NTS being reflected at every stage of the competence management process, from recruitment through to incident investigation. Given that effective integration is key, it is vital that companies understand the issues in integrating NTS so that the benefits of NTS development can be realised. Building on the guidance provided in a recently published RSSB report (RSSB (2012) Non-technical skills required in the train driver role: Developing an integrated approach to NTS training and investment), this paper will provide practical advice on how NTS can be effectively integrated. Using the Action Model (a model based on information processing models) as a framework, it will explain how companies can establish a) how NTS relate to technical tasks, b) the extent to which NTS can be considered in recruitment, c) how to understand how NTS contribute to incidents and accidents. Issues relating to building a positive NTS culture will also be discussed.
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Abstract 32:
Multiple Perspectives through Multiple Analogues

Shailendra N Jaiswal *(Railway Staff College Indian Railways)*

Abstract Information

Keywords:

Training innovations (methods)

Key lessons:

Use a competency based framework to develop key competencies in the management cadre.

Develop Core competency of business environment analysis along with competencies of Technology mapping and their utilization and change management.

Use competency development to revitalize human resources.

Corresponding author:

Shailendra N Jaiswal
+91 2652651957
shailendra_jaiswal@yahoo.com

Abstract

A new method for generating new perspectives and out of box Ideas By Shailendra Jaiswal, IRSME, Senior Professor Management Railway Staff College , Ministry of Railways, Government of India The current environment Indian Railways is characterized by numerous challenges such as financial inadequacy, technological changes, economic growth, increasing customer expectations etc . Indian Railways needs to reinvent itself through Innovations to overcome the challenges . Inputs on innovation and creativity are integral part of management programmes conducted at Railway Staff College India . PROGRAMME ON INNOVATION THROUGH CREATIVITY Railways is a multidisciplinary organization requiring specialized knowledge from many disciplines such as Transportation, Marketing Mechanical Engineering , Electrical Engineering , Civil Engineering , Finance , HR ,Safety and others. The purpose of inputs on INNOVATION THROUGH CREATIVITY is to enhance the innovative capability of senior managers of Indian Railways. The programme takes an outside in approach to develop capacity to synthesize knowledge from multiple perspectives and distributed expertise for innovations . A new Method of Innovation De Bono's method of Six thinking hats , TRIZ technique of Nine Boxes and Reframing have provided a framework for different perspectives . These methods describe possibilities of different perceptions . A new Method of Multiple Perspectives through Multiple Analogies (MPMA) is outlined in this paper, that goes beyond the current methods and leads to generation of perspectives and ideas . The methodology of MPMA has been used in Railway Staff for training of senior managers in Innovation Management by the author . The background of the method , its process and the results of its application are described in this paper . The MPMA method maps and transfers essence and insights from several source domains to one target domain through intermediate domains . It leads to extension of structural principles from a familiar set of knowledge to an unfamiliar one. This extension enables viewing of the situation from different perspectives. Intermediate domains are key external driving forces that impact Indian Railways like Globalization ,Population growth , urbanization etc . Target Domains are innovation challenges for Indian Railways like Optimizing energy usage to reduce carbon footprint , monetizing potential of railway of land , Increasing speed of freight trains and improving sanitation at railway station etc . OUTPUT Application of the method at railway staff college has resulted in several new perspectives and ideas , following are some of the new ideas and perspectives generated with the application of the method.

- Delivery of Value Added Services like banking , service centers leveraging presence of Railways across the country.
- Customer loyalty and optimizer card.
- Mobile based ticketing and validation.
- Optimize seat availability through real time Information.
- Leveraging the full potential of Maximum Moving Dimension for double stacking of non standard containers .

The paper concludes with a discussion about potential application of MPMA method to areas like Road mapping , Scenario building ,Business environment analysis and Multidisciplinary Modeling .

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Abstract 33:
A Competency Framework Approach to Training in the Transport Sector

Narayana B. V. L (Indian Railways)

Abstract Information

Keywords:

Non Technical Skills

Key lessons:

Appreciate the multidisciplinary nature of Railway Working.

Learnabout the role of Innovation in Railway Management.

Learn skills of generating multiple perspectives and idea generation.

Corresponding author:

Narayana B. V. L.
+91 2652651975
bnvlakshmi@iimahd.ernet.in

Abstract

THE PROBLEM IDENTIFICATION AND DEFINITION

The transport sector is critical for inclusive development. It forms the single most important developmental instrument which is critical for an individual's economic and social well being and through it the society. Although, considered a "necessary evil", transport services add value over time and space to men and material. Over the years the economic and social roles of transport systems have oscillated from

- From being driven to becoming driver of growth and community development.
- From being intrinsically coupled with economic growth to becoming relatively independent of it.
- From being technology driven in its production processes to becoming overwhelmingly technology dependent for delivery of its services.
- From a competitive perspective to a cooperative framework for development of various modes of transport. This changing momentum indicates a paradigm shift in the role of transport systems. Associated with these changing dimensions, but distinct from it, are some critical issues which are commonly seen and debated which are
- Persistent over estimation of demand for transport services. • Inability to position the concept of optimal modal mix as central to planning.
- Inability to position other forms of governance mechanisms to ensure efficiency of transport services except competition
- Reluctance on part of operators to invest in capacity creation.

SCOPE

This paper takes a view that the root cause of these issues lies in the absence of certain competencies and/or the absence of the core competency of strategic thinking and orientation. These competencies are seen among management of business ventures in other industries while lacking in those ventures associated with transport services. This ability is worse off in operators of rail transport services. This is considered as a result of overriding emphasis on implementation and service provision; irrespective of the fact whether they are providers of pure services only or are both infrastructure and service providers. Effective implementation, by its very nature leads to organisations becoming mechanistic and closed systems hereby deflecting them from the necessity to look at strategic orientation and thus impacting their ability to plan and build their future. Training systems are fundamental to organisations' ability to adapt at the strategic level. If such organisations had competency based training systems, such an adaptation would have been the norm. The mechanistic orientation, driven by the urge to achieve highest order of efficiency, tends to reinforce information based training systems, reinforcing their myopic vision.

ISSUES BEING ADDRESSED

- This paper proposes that transport systems need to shift to use of competency based training systems. Based on the experience of Indian railways, this paper proposes a competency based training framework which posits a need for:
- Development of core competency of business environment analysis.
- Utilize this core competency to create competency of technology mapping and skills to use such technologies.
- Revitalize human resources through reorientation to futuristic competency development and facilitate seamless organizational change.

LIKELY OUTCOME

This framework, if incorporated, would solve many of the problems and issues, presently being faced by the transport systems

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Abstract 34:
Computer-Based Training Project

Andy Willaert (Transurb Technirail)

Abstract Information

Keywords:

Non Technical Skills

Key lessons:

Give the delegates insights on an implemented Computer Based Training project.

More generally speaking, this pedagogical tool may inspire the delegates to apply a similar approach to a very broad series of training subjects.

Corresponding author:

Andy Willaert
+32 475620111
a.willaert@transurb.com

Abstract

Framework Considering Norges Statsbaner's (NSB) procurement of 26 FLIRT EMU type "Long Local" trains and 24 "Short Regional" trains (class 74), a vast training program was initiated that involved the implementation of state-of-the-art training techniques and solutions. One of these solutions consisted in realizing a Computer Based Training tool (CBT) that aims at giving students the possibility to acquire knowledge independently and flexibly either in a classroom or online. The CBT provides the trainee with a theoretical overview of the technical equipment on board, and a general overview of the normal operation and malfunction procedures according to the 'Operators Manual'. The CBT is intended for drivers, train crew and maintenance personnel and allows them to operate the train in a safe manner. It is used as a supplement to the theoretical courses. The main goal of CBT is to make most of the training without using a real train. 15 training topics The CBT includes 15 topics, a.o. the train bus system, components and system visualization, operation of different systems (e.g. coupling of high-voltage switch/pantograph, earthing system, …), high-voltage circuit, auxiliary current circuit and battery circuit, structure and functionality, traction system,… Learning Management System (LMS) Via a LMS, all training information is stored and analyzed so that students can be evaluated, certified and followed-up.

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Abstract 37:
Customer Service

Lucky Tshepo Montana (PRASA), *Nerishni Shunmugam* (Prodigy Training Pty Ltd)

Abstract Information

Keywords:

Customer service

Key lessons:

How to create a bespoke solution for customer service related to passenger rail services. This entails alignment to the company's 16 year growth and infrastructural plan, customising to KPIs of frontline employee job descriptions, safety standards and the company's brand promise.

Integrating technical competence with soft skills training to ensure customer satisfaction whilst maintaining cost recovery, reduction in safety incidents, etc.

The value of personal onsite (on the platform) training, and how the ROI/ impact was measured.

Dovetailing employee value proposition with the customers moments of truth

Modularised training that covers the entire customer service value chain.

Corresponding authors:

Lucky Tshepo Montana
+27 (0)127487000
lmontana@prasa.com

Nerishni Shunmugam
+21 (0)824577710
nerishni@skillsmatters.com

Abstract

In an effort to be an international recognized rail passenger services company, Passenger Rail Agency of South Africa (PRASA) is undertaking to make improvements. Central to this is a whole new way of thinking, feeling and acting: most importantly to passengers. The PRASA Strategic Roadmap has been done to navigate the entire organization. By 2015 and beyond the roadmap says that PRASA should be known for implementing best international practices and expanding in terms of rural and regional mobility To ensure that PRASA stays on course with respect to the Strategic Roadmap, PRASA employees must stay close in terms of living the vision and mission of PRASA. Three elements: sustainability, modal integration and Service Excellence will drive the vision. The main aim of PRASA Service excellence philosophy is that new values must be inculcated amongst all staff. These values must translate or result in greater customer satisfaction: for PRASA this means that it must provide the kind of service that ensures that our customers leave with a smile. To embed this value amongst frontline workers who directly work at the point of the customer or passenger, PRASA has decided to implement a customised frontline service excellence programme called the PRASA MYStation Frontline Customer Service Excellence Programme. Underlying the PRASA MyStation Programme is the overall values that underlie the behaviour and attitudes towards customers and passengers. Firstly, the goal of the MyStation programme is to begin to instil a new mindset regarding the values that frontline workers possess towards A. Service excellence, B. Attitude towards passengers and C their role with respect to ensuring that customers leave with a smile. In many instances frontline workers work and function not only in challenging environments but environments where variables such as late trains cannot be controlled by them. The MyStation programme introduces themes, skillsets and techniques that can be used by individual frontline workers and by teams of frontline workers to resolve situations and ensure that customer issues are always addressed. PRASA's customized Frontline Customer Service Excellence programme manifests a number of learning points and best practices for other passenger rail companies. Examples of knowledge and behavioural outcomes that frontline team members will acquire are:

- Have an understanding of the transport sector and the passenger value chain
- Inculcate the brand values of PRASA and know how to animate "Be Moved"
- Know the performance standards of PRASA frontline workers
- Be able to communicate effectively at the customer interface
- Know the customer moments of truth and role that frontline workers play at these junctures
- Be able and willing to address and resolve customer complaints Customer service is about linking the brand promise, knowledge and service levels of frontline staff with efficient processes.

Frontline staff across stations and regions must all have a similar understanding relating to service values. The Harvard Business Review indicates that a 5% increase in customer retention can increase a company's profit by a minimum of 25%. In South Africa, transport is a socio-economic issue, transport modes link communities and people to jobs, to places of education and care and to the safety of their families. The MyStation programme is a journey that will establish a culture of quality, accountability and ownership of customer service.
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Abstract 38:
Improvement of Security & Performance

Ana Lúcia Pereira [(CP, E.P.E.)]

Abstract Information

Keywords:

Training innovations (methods)

Key lessons:

Improvement of a high level of security and safety performance.

Regular training for staff linked with the safety and security such as the staff on board the trains and the staff in the stations.

Monitoring and improvement of areas with deficits identified.

Ensuring compliment of national legislation.

Follow the European Standards and Legislation.

Corresponding author:

Ana Lúcia Pereira
+35 1211023212
appereira@cp.pt

Abstract

The CP's mission is to offer passenger rail transport services in an innovative way, safeguarding the environment and improving safety and security. Security is one of the core business values of CP. The results of customer satisfaction surveys show confidence in the safety of railway transportation. Through training, we value the skills of our employees to guarantee that safety and security in passenger mobility. Our training plan consists of: • Regular training cycles that cover all workers connected with safety functions and commercial functions; • Training to improve performance in areas where deficits are identified, or to learn new methods, new work processes or due modernizations. The main objectives of the training plan are to fulfill national legislation on professional training and ensure high performance standards and permanent level of traffic safety and commercial service. The issue that we intend to address, in our presentation, is the regular triennial cycle training that cover/involve 5 groups of training for workers connected with security and mobility of passengers (train driver, travelling ticket collector, material operators and inspectors, etc.). The groups training are made up of:
1. Technical regulations for safety It covers the rules applied to the movement, braking systems, composition, manoeuvrings and preparation of trains, communication systems and control systems speed. Trainings are different depending on the professional category of trainees.
2. Driving and breakdown fix Trainings aimed to train drivers. It is given one session for every type train engine. It covers driving techniques to ensure an economic and safe driving and to guarantee the ability to resolve breakdowns in transit.
3. Accidents and emergencies It covers the regulatory documents that regulate the action of the several actors in concrete situations of accidents and disturbances in circulation. The training can be different according to the geographical area where the trainees work.
4. Commercial regulations Trainings aimed to travelling ticket collector. It covers trade rules and tariffs.
5. Attendance and conflict management Trainings aimed to travelling ticket collector. These sessions are behavioural training and are targeted to the specific characteristics of the most common conflicts. In the training plan for the period 2013/2015 we will introduce in these training the execution of diagnostic tests of knowledge at the beginning of the session and final evaluation tests knowledge acquisition at the end of the training process. The goal is to improve our practice of planning and evaluation of the effectiveness of training. We hope with the results of diagnostic tests to adjust the training content and/or adjust the frequency of the trainings. With the results of tests of knowledge acquisition, verify the effectiveness of the training process (methods, means and duration), and to individually identify workers who require a strengthening of their training.

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Abstract 39:
Blended Safety Training: Enhancing Safety Awareness

Jos Gabriëls *(Railinfra Opleidinge.)*

Abstract Information

Keywords:

Training innovations (methods)

Key lessons:

An effective method to achieve safety awareness.

Blended learning in practice.

A new approach to enhance safety behaviour.

Corresponding author:

Jos Gabriëls
+31 647946163
j.g.gabriels@railinfraopleidingen.nl

Abstract

ProRail (the dutch infrastructure provider) aims to reduce avoidable safety incidents to 0 in 2015. It is one (and the most important) of the strategic topics for the next years. To achieve this goal it is necessary to inform all the safety-critical staff about the rules and regulations and particular the way to behave when working on or around the track. All the organisations that work for ProRail agreed on 9 Live Saving Rules. ProRail aims to improve the safety notion and awareness by informing and training the safety-critical staff. An enforcement policy is part of the programme. ProRail introduces in 2013 the safety passport which allows staff to access the ProRail working areas for a period of three years. To obtain the safety passport there are two conditions for the staff : 1. doing an e-learning program and complete the test with a good result 2. joining a half day safety training For everyone who works on or around the track safety is a daily issue, it is their duty to work always safe. But still there are a lot of incidents in the rail infrastructure environment. The e-learning programme is non conformistic in the way how people get informed about safety matters around the track. Every safety topic starts with a short and funny video. Every item is introduced by a young woman and after the video the user can find more information about the topic. People can test their knowledge online and at the end of the programme everyone has to complete a test about safety knowledge. Doing the e-learning programme is the first step and prepares for the training. The training is built on real life dilemmas. We confront the learners (groups of 12 people) with a dilemma by showing them a video of the dilemma. Every video leads to a group discussion to help the learners to refreshing their opinions and increasing the problem resolving power in different circumstances. During the training only 3 dilemmas will be captured. After the training we will provide 6 more dilemmas to be discussed later within the organisations to enhance learning for a longer period. The programme 'Safety passport' will be launched November 2012. In a period of 7 months 10,000 people will join the e-learning programme and the training. In the paper we will present the methods and the results (benefits) of the programme. We can show the e-learning programme and a video of a dilemma. Both are available is English (video with subtitles).

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Abstract 40:
Assessing Changing Needs for Workforce Development in the United States in the High-Speed Era

Peter J. Haas (Mineta Transportation Institute), *Pasi Lautala* (Michigan Technological University)

Abstract Information

Keywords:

Ageing workforce/new generation
Young talent programme
Social Media
International training

Key lessons:

An update on the changing nature of the rail industry in the U.S.

New methods for estimating the size and nature of the emerging rail workforce in the wake of more advanced passenger rail systems

A qualitative comparison of training and higher education for rail systems in the U.S. and other nations

A synthesis of quantitative and qualitative approaches to understanding and estimating training and higher education needs in the U.S.

Corresponding authors:

Peter J. Haas
+1 4089245691
peter.haas@sjsu.edu

Pasi Lautala
+1 9064873547
ptlautal@mtu.edu

Abstract

Renewed interest and investment in enhanced passenger rail in the U.S. in the form of new high-speed and higher-speed lines have caught the industry unprepared to understand and meet the demand for appropriate training and education in all aspects of rail systems. Rail training and higher education in the US, particularly for passenger systems, have been virtually dormant over a period of decades, but are now of critical interest as design and construction on new or upgraded rail systems is beginning across the US. This paper will explore both quantitative estimates and a more grounded, qualitative approach to understanding how the industry (including academic, government and other types of stakeholders) can prepare a new workforce for this imposing task. Quantitative estimates based on detailed cost data and existing labor force characteristics provide one perspective on this challenge; a more grounded, hands-on consideration of the development of existing European and Asian rail systems can provide additional insight. We seek to explore and reconcile the information presented by these approaches in an effort to help optimize ongoing efforts to prepare a suitable American rail workforce. Billions of dollars are currently being invested by state and federal agencies in the U.S. to develop a variety of passenger rail systems that range from incremental upgrades to existing routes to de novo high-speed segments. The existing rail workforce is both rapidly aging and technologically under prepared for the newer types of systems. Little is known, however, about how many workers are required over the coming decades, as well as what kinds of workers, and their education and training needs. Existing approaches simply project workforce size on the basis of crude estimators linked to prevailing industry infrastructure multipliers. Our study will provide much more refined workforce parameters based on more detailed cost input data. Existing rail systems across the globe present another source of insight into understanding the workforce challenge, but this too has received relatively short shrift, particularly in the U.S. We assemble information gleaned from on-site interviews and other sources of documentation to describe how European and Asian systems have geared up to build and operate modern rail systems. Finally, because these two sources provide varying perspectives and types of information on the workforce challenge, we seek to synthesize them and offer an optimized assessment of U.S rail training and education needs of the coming decades.
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Abstract 42:
On-line Learning Diary Used in Conductor Training

Kari Koskinen (VR Group Ltd.), *Timo Kuntsi* (Finnish Railways)

Abstract Information

Keywords:

Evaluation

Key lessons:

Why interactive on-line diary is effective.

How to run the diary in practice.

Benefits and challenges for the users.

How to handle extreme cases on-line (passive / hyper-active).

How to connect the diary into training strategy.

Corresponding authors:

Kari Koskinen
+35 8408622 581
kari.koskinen@vr.fi

Timo Kuntsi
+35 8408665 879
timo.kuntsi@vr.fi

Abstract

Learning diary is an important tool for reflection and for evaluation. VR Group Training Centre uses an interactive on-line learning diary in conductor training. The diary is open for all the parties involved in the training/learning process: the trainee, the trainers, and the fellow trainees. Idea is that in addition to the on-line dialogue between the trainee and the trainer, the trainee gets a multiplied reflection and feedback about his/her learning process. This is a very supportive and encouraging process. It also helps to create a team spirit in the classroom, as elements from the on-line discussion are brought into a live dialogue in the face-to-face setting. Trainers can informally but effectively evaluate the progress of training on an individual level, and offer support accordingly. Using this kind of interactive diary is a demanding task for the trainer. A lot of commitment and flexibility is required, as trainees expect feedback in a certain timeframe. Especially with large groups (with 20-25 participants), the volume of cumulative feedback gets quite big. The conductor training lasts 16 weeks, of which the first 8 weeks are theoretical training, and the last 8 weeks are on-the-job. The learning diary is used throughout the training, but most actively during the first and last weeks. On average trainees write the diary 2 to 4 times a week. The trainer needs to reserve a minimum of three working days per course for the on-line activities. If there is a lot of diary activity, it can be up to 10 working days per course. Learning diaries are run within a learning management system (LMS). Each course has its own learning space in the LMS, and the diaries are an integral element in the space. The LMS is used as a SaaS type (cloud) service, and the learning space can be accessed flexibly either via intranet or the internet. As the training is completed, the course space is kept open for as long as there is some activity going on. Typically the activity fades in about 4 weeks. Trainees can export their learning diaries as a file or as a hard copy for later use and development in the profession. VR Group Training Centre has defined its Principles, according to which training should take place. The three Principles are Goal oriented, Active, and Productive. (In Finnish an acronym 3T is used for "Tavoitteellinen, Toiminnallinen, Tuloksekas".) Using the on-line diary is in line with the Principles in all respects. The Principles are shared both with trainers and trainees.
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Abstract 44:
Project on Service of the Parisian Suburban Line H: Towards a "service lab" or how to manage initiative

Olivier Martin-Durie (SNCF)

Abstract Information

Keywords:

Customer Service

Key lessons:

Using new training methods to come from a "culture of standards" to a "culture of initiatives" of railway workers dealing with customer service

Deeper understanding of how experimentation of new training methods develops the motivation of these railway workers

Greater awareness of how this experimentation produces new training content and new training methods.

Corresponding author:

Olivier Martin-Durie
+33 6 15 82 84 27
olivier.martin-durie@sncf.fr

Abstract

Project on service of the Parisian suburban line H: towards a "service lab" or how to manage initiative Since seven years the University of the Service follows its vocation to spread the culture of service and customer relationship within SNCF's two passenger transport Business Units (long distance transport and local and regional transport). It is based on the concepts of service marketing and management, as well as on innovative teaching methods. In this context in 2009, the management of the "Line H" wished to take the opportunity of the upgrading of its infrastructure and its stations and of the arrival of its new train "the FRANCILIEN" to develop a quality customer relationship. A diagnosis, prior to any action, showed the need of restoring the meaning of this project. The management of the "Line H" set itself as an objective to give a service "full of considerations" to their customers. Rather than to produce a plan of classic training, it was decided to carry out an experimentation with following objectives:

- To restore the teams' confidence and motivation
- To promote the job and the cooperation between jobs
- To rally teams in favour of the service project of line H
- To identify and test effective behaviours as service professionals towards the customers

In laboratories it was possible to work on the "moments of truth" of the customer's route, see where it is possible to have initiatives and synergies between employees of the four jobs in contact with the customer (train conductors, staff of the stations, train drivers, security staff). These laboratories also made managers think and work on changing their position in order to be more capable of creating the conditions to take initiatives, of selecting them, of making them live, of measuring their impacts and sharing them. Becoming a Manager-Coach. Tests, in real size, allowed to assess the good, even very good satisfaction of the customers and to make a very fast return to the teams.

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Abstract 45:
Breaking the 'Big Simulator' Paradigm - Augmenting Simulation with e-learning

Tony Mildred (Sydac)

Abstract Information

Keywords:

Technology,
Simulators
Multimedia
Video,
Content Management Systems.

Key lessons:

How to plan a combination of training technologies to get the best value out of your investment.

How to improve training 'band-width' without the need to increase the number of trainers.

How to work with your training system provider to ensure that your money is spent where it provides most training benefit.

Corresponding author:

Tony Mildred
+61 8 8239 3555
tony.mildred@sydac.com.au

Abstract

e-Learning has been with us in various forms and under various names for many years now. It continues to evolve almost as quickly as the underpinning technology and media evolve. However, for those of us that work in the simulation training industry, e-Learning has provided some unique challenges. Traditional simulator manufacturers pride themselves on developing equipment of the highest fidelity that provides an engaging and challenging learning and assessment environment. However, our customers have, over the past decade or so, been presented with a wide range of technology based learning solutions that each seem to offer value in the teaching, learning and assessment space. There is a risk that traditional 'high-end' training simulator providers can find themselves wrong-footed from a technology, skill-set and even possibly from a mind-set point of view. There is also a risk that simulator providers may dismiss e-Learning as completely separate to their field. So how can we avoid these risks and provide a more complete solution? This paper looks at how to break out of the 'big simulator' paradigm. How can we be more receptive to the needs of learning providers and learners themselves? How can we be more agile? How can we be more cost effective? The paper will take a case-study approach looking at how these challenges are being met within Sydac.

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Abstract 46:
Tunnel Evacuation Training

Joep von Berg (Nederlandse Spoorwegen)

Abstract Information

Keywords:

Training innovations (methods)

Key lessons:

What are succesfactors in using a multiplayer serious game?

How to use a virtual environment in a safety training.

Corresponding author:

Joep von Berg
joep.vonberg@ns.nl

Abstract

Tunnel evacuation training. Serious, it's not a game. In 2009 NS faced an incident in the schiphol railtunnel. Garbage in the tunnel caught fire and short circuiting caused disturbed signals and switches. Several trains filled with passengers got stuck in the tunnel. There was increasing smoke development. In this situation - stranded in a tunnel with poor communication and increasing smoke - the standard procedures were not sufficient. The train personnel did not know what to do. Fortunately, it appeared to be no more than an incident. It did not turn into a disaster. But this incident started a discussion about the do's and don't s in such a situation. An investigation committee with experts from several disciplines wrote a report with analysis and recommendations. One of the recommendations was to train the personnel with guidelines in self reliance. The aim of the training was to learn to use the guidelines wisely in the first fifteen minutes. For during the first fifteen minutes from the start of an incident in a tunnel people have to act independently whereas firefighters and relief workers are not yet present. We got assigned the task to develop a training. The NS safety department was in favour of organizing some kind of live exercise with smoke and fire. But with a target audience of 6000 employees this would be a time and cost consuming method. Besides the logistical problems of a live training event we also thought that there had to be better didactical methods to meet the training needs. After a thorough analysis we decided to develop an module "tunnelevacuation" with the use of a multiplayer serious game in a classroom setting accompanied by a trainer. In 2011 we train(ed) our 6000 employees in groups of 4 people on this subject. And until now (oktober 2011) it turned out to be a appreciated training. In the presentation I shall not focus on the do's and don'ts during a "fire and smoke in tunnel incident". I would like to show (with some video's) and tell what our training looks like. What didactical approach we used. I will explain what kind of facilities we needed and what type of trainers we deployed.

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Abstract 47:
Training Strategies to Support the Implementation of a Competence Management System for Train Driver Non-Technical Skills

Steve Bailey (First Great Western), *Andy Moore* (First Great Western), *Andrew Russell* (Rail Training International)

Abstract Information

Keywords:

Non Technical Skills

Key lessons:

The paper presents the approach adopted by First Great Western (FGW) for the introduction of a Competence Management System (CMS) for train drivers that included Non-Technical Skills (NTS). The paper will describe the structure of the CMS for NTS, including:

Listing the NTS competencies used

Supporting Guidance Notes

Evidence criteria

Methods of assessment

Behavioural indicators (good / poor behaviours)

The paper will also set-out the implementation of the NTS training strategy and varieties of training packages used to support the introduction of the CMS.

The outcomes of the training in terms of the reaction of the trainees and the impact of the training on safety critical performance measures are discussed, along with a summary of lessons learned.

Corresponding authors:

Steve Bailey
+44 7887 896567
steve.bailey@firstgroup.com

Andy Moore
+44 7818010176
andy.moore@firstgroup.com

Andrew Russell
+44 7906905487
andrewrussell@rti.co.uk

Abstract

Non-Technical Skills (NTS) are generic skills that underpin and enhance technical tasks, improving safety by helping people to anticipate, identify and mitigate against errors. The UK Rail Safety & Standards Board (RSSB) defines NTS as the cognitive, social and personal resource skills that complement technical skills and contribute to safe and efficient task performance. NTS are more general than technical skills and can be applied to a range of tasks and procedures Across the rail industry, there is a growing interest and recognition of Non-Technical Skills (NTS). Research has shown that NTS (such as situational awareness and decision making) underpin safe performance at work for safety critical staff. During the past two years, First Great Western (FGW) has introduced a new Competence Management System (CMS) for train drivers, which for the first time included key Non-Technical Skills. The introduction of NTS required the development of a structured long-term training strategy, which provides an incremental range of training interventions for different job roles. The training strategy used is dependent on the level of training facilities available within the company (for example, SMART Boards and Train Driver simulators). Training for Managers, Competence Assessors and Driver Instructors has been delivered by highly qualified human factors specialists from within the rail industry, which is consistent with the needs of the target audience for being “within the group”. The training consisted of two day programmes, with role specific differences in content. Reaction to the training by trainees has been extremely positive as measured through end of training questionnaires. A different training strategy has been used for train drivers, with NTS specific content being contained within the planned six monthly process of safety briefings. Training design has been informed by existing research into train driver cognitive style. The content of the NTS section of the safety briefings initially focused on a combination of NTS theory and application of NTS to incident case studies. Reaction to the training by drivers was less positive to the theory content, but positive to the case studies. Based on this this feedback, more recent safety briefs have used very local case studies designed to appeal to “Analytic” learners. As a result, trainee reaction to the training method is significantly more positive. Ultimately, the judgement of the success of the introduction of the CMS with a specific focus on NTS will be the impact on the established key company performance measures, such as Signals Passed At Danger (SPADs), station overruns, “failed to call” and driver initiated TPWS interventions. In truth, it is still far too early to draw any definite conclusions and it is always difficult to isolate training as the cause of any performance movement. However, there are encouraging signs of positive movements on specific types of SPAD that have been covered in the safety briefing process and on station overruns. The forthcoming introduction of new training technologies allow for more sophisticated NTS training approaches in the future. Training on NTS is also being included in other relevant training courses, such as for new train drivers, Incident Management and incident investigation. Similar Competence Management Systems that include NTS will now be introduced to other safety-critical job roles, such as Station Despatch staff and Shunters.

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