Background

The Chatsworth, California collision, in September 2008, between two trains was believed to have been caused by the driver of one train failing to respond to a signal while texting on his mobile phone. Following this, the industry agreed to address the issue of using mobile devices. The main priority was to develop an education programme for train drivers - research project T904 Development of a train driver education programme on mobile phone risk.

This research project developed a second education programme which looked at non-driving contexts that can also create associated hazards when using a mobile device:

- While working trackside, using a mobile device could impact decision-making and cause errors which could lead to track workers moving outside safe positions of work and potentially being struck by a train.
- Distraction during train despatch could potentially create procedural errors, increasing the likelihood of a passenger incident, accident, or a SPAD.
- Using mobile devices while in a control room or office environment could lead to an error or omission being made that could lead to a failure, incident or accident, or distract others doing safety-critical work.

The risks from mobile device distraction has to be controlled to a level that is as low as reasonably practicable.

Among the staff surveyed, 70% had been issued with a mobile device for work, and 40% reported using it at least once a day to talk to colleagues. The mandatory requirements relating to mobile devices are described in the Rule Book and specific guidance on the appropriate use of mobile devices is contained within individual company policies.

Nevertheless, there is and will continue to be a real potential for inappropriate mobile device use by safety-critical, non-driving,
staff which could significantly affect the safety of the line. Although rules and enforcement have a role to play in controlling problem mobile device use, relying on enforcement alone is not sufficient. Whether privately owned or issued for work, mobile devices are part of daily life. In some cases the mobile device is essential equipment for communication with other workers. Enforcement needs to be supported by a framework of education aimed at those working trackside, at stations, and in control rooms. This education should ensure that staff working in these environments understand the impact on risk and are equipped with key decision-making skills to assess when it is safe to use a mobile device.

Aims

The research was started under the sponsorship of Operations Focus Group and its successor, Train Operations Risk Group (TORG) supports the recommendations included in the final report; and recommends their adoption by duty holders.

The aims of this project were to:

- Provide better insight and increased understanding about the current patterns of, and worker attitudes and behaviours towards, mobile device use in three non-driving contexts.
- Provide the industry with an effective, fit-for-purpose education programme designed to reduce the incidence of inappropriate mobile device use for safety-critical staff working in three safety-critical (non-driving) environments: trackside, at station platforms and in control rooms.
- Provide the industry with a means to reduce the likelihood of incidents, accidents, and failures caused by mobile device use by safety-critical staff working in non-driving contexts.
- Demonstrate the benefit of the education programme in terms of improved worker attitudes, behaviours, and reduced intentions to use mobile devices.
- Facilitate the use of the education programme by developing suitable supporting materials such as accompanying notes and promoting the education programme.
Findings

Activity 1 - Industry impacts and requirements
The first project activity investigated industry views and opinions. A literature review delivered an understanding of risk related to mobile devices. This produced a set of requirements and a profile for the target audience. The two predominant effects relating to safety are: diverting the user's attention from the task being carried out, which could lead to missing changes in the environment, missing a task or forgetting a place in a task; and reducing the user's reaction time.

Activity 2 - Review of T904 driver education programme
The good practice and lessons learnt from T904 were examined to optimise project efficiency and value for money, and were used to update the set of industry requirements for an education programme.

Activity 3 - Industry attitudes and behaviours
A survey of safety critical rail staff and managers showed that 70% of staff have been issued with mobile devices for work. Only 34% of staff felt that their work performance was worse when using a mobile device. This demonstrated the need for education about the risk associated with mobile device use, and for key decision-making skills so that they can assess when it is safe to use a mobile device.

Activity 4 - Education programme design
Two versions of the programme were developed. The classroom-based version, supported by trainer notes, contains four modules comprising three hours of content. The self-managed version, for use by individuals, on a personal computer has about 1.5 hours of content.

Participants have an opportunity to develop their risk-based decision-making skills through learning and practicing.

Activity 5 - Education programme testing
The programme was tested during November and December 2013.

The feedback about the training programme was generally very positive. Three-quarters (76%) of participants thought that the course content was relevant and useful to their job. The majority of participants (82%) felt that the programme would be effective in helping to reduce inappropriate mobile device use and that it
would help them decide about appropriate and inappropriate mobile device use at work.

Activity 6 - Education programme evaluation

Immediately before and after delivery of the education programme, and then three months later, participants were asked to complete a survey to measure attitudes towards mobile device use, workplace behaviours and understanding of risk associated with mobile device use.

Results suggest that the training programme had a positive impact on participants' learning and awareness of risk, both immediately after the training and after a longer period.

The findings for making and receiving calls and for sending and reading emails suggest that the training may have increased participants' awareness of the risks and led to safer reported behaviours. Where changes in pre and post-training data are indicated, the findings do suggest that participants' behaviour is changing in a positive direction.

When participants were asked to rate the risks associated with a range of activities, those associated with mobile device use were rated by more participants as 'extremely risky' after they had completed the training. A greater number of participants also strongly agreed that their work performance is worse when using a mobile device. These findings held constant three months after the training. This suggests that the training had a positive impact on participants' attitudes and there was increased awareness about the negative impact of mobile device use on performance.

The number of participants who reported that they would challenge others about mobile device use in inappropriate situations increased after participating in the training, both immediately after the training had been completed and three months post-training.

Activity 7 - Programme refinement

The pilot testing and evaluation process provided a platform to identify any opportunities for refinement of the programme. A number of opportunities for refinement have been identified and implemented.
Deliverables
The project has produced a number of deliverables that are available on SPARK.
- A classroom-based education course, comprising PowerPoint presentation material, supported by trainers' notes, questionnaires and video material
- A web-ready multimedia course, in HTML format.
- A final report, including discussion and learning from the research. It also proposes a number of recommendations for future support of the programme.
- CDs will be made available, via a controlled distribution process, to support companies that are in locations without internet connection to help them deliver the training.

Method
The methods used in this project featured:
- A literature review, to identify current research, policies and examples of incidents which have or could occur as a result of mobile device use.
- Site visits, to undertake task and communication observations, and interview frontline staff regarding mobile device use, risks and training methods.
- Focus groups, to help develop an industry requirements questionnaire, as well as providing general feedback on mobile device use and potential problems.
- Online surveys, to gather industry requirements for the programme, and measure attitudes towards mobile device use, workplace behaviours and understanding of risk associated with mobile device use.
- Expert reviews, to assess the T904 training material and suggest areas for improvement.
- Paper-based surveys immediately before and after the classroom pilot training sessions, to assess the impact of the training.
- Telephone interviews with staff managers and safety representatives, to gather industry requirements and discuss participants' responses to the training.

Next Steps
A number of key recommendations are included in the final report, including:
- A training reinforcement strategy should be devised by organisations, so that it can be implemented immediately following training delivery, to include refresher courses.
Development of an education programme on the risk from using mobile phones and electronic communication devices in the railway industry
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- Organisations should examine methods of linking the programme to individuals' competency requirements using the multi-media course and incorporate the classroom-based education programme into new starter training.
- All organisations operating in a safety critical rail environment should have suitable company policies in place on mobile device use to support safe working practices, as soon as possible. These policies should be communicated to all staff, including subcontractors, to promote understanding and adherence.
- Incident data should be used to support the development of a framework relating to the management of mobile device use and distraction, given the increasing usage and reliance on mobile device technologies.
- A communications plan is being developed to deliver key messages to industry.

The TORG supports the recommendations included in the final report and recommends their adoption by duty holders.

Contact
For more information please contact:

Michael Woods
Head of Operations and Management Research
R&D Programme
RSSB
enquirydesk@rssb.co.uk