



Training: the test of time

The effectiveness of training in
promoting a positive OSH culture

Summary report 2013

IOSH, the Chartered body for safety and health professionals, is committed to evidence-based practice in workplace safety and health. We maintain a Research for Public Benefit Fund to support research and inspire innovation as part of our work as a thought leader in safety and health.

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In this document, you'll find a summary of the independent study we commissioned from researchers at the University of Manchester to investigate how effective training is in promoting a positive occupational safety and health culture.



What's the problem?

Training is accepted as an important safety management practice. But do we know how effective it is in the long term? Despite its widespread use, and the time and financial commitments needed to deliver successful employee training, there is limited current evidence of the impact of safety training over longer periods. Earlier training evaluation studies have also tended to focus on a fairly narrow range of outcomes, with few looking at broader impacts on organisational safety culture. IOSH commissioned Dr Sharon Clarke and Dr Christine Flitcroft from the University of Manchester's Business School to test a tailored training package delivered in a range of different businesses, measuring its effects one year after it had been run, and again two years later.

The study set out to:

- identify what factors influence the results of safety training
- evaluate the impact of safety training on employees' safety attitudes and perceptions, as well as accident and injury rates
- examine the relationship between training and performance
- investigate the long term effects of training in relation to maintaining and promoting a positive safety culture
- establish good practice guidelines for implementing a training programme to improve safety.

What did our researchers do?

The research team began by reviewing the existing research literature on the effects of training interventions on employee attitudes and behaviour, as well as good practice in behavioural sampling and training observers in the technique.

The study centred on a sample of 10 businesses: seven small or medium-sized enterprises, and three large companies. The organisations, all based in the north west of England, were from the manufacturing, construction, chemical and service industries.

The researchers sought to obtain managerial perspectives on various pieces of safety and health information, including accident statistics and the provision and implementation of safety and health training. They did this through 19 semi-structured interviews, which they conducted with employees, safety and health managers and managing directors. From these interviews, baseline measures of safety climate and quantitative surveys (one for employees and one for management) were developed.

The researchers then designed a training programme to be delivered in all 10 companies. The training package consisted of specific safety knowledge and skills, such as near-miss and accident reporting and producing safety bulletins, as well as general safety awareness. It was developed after reviewing the baseline safety climate data for the companies in the sample, considering feedback from safety and health contacts at the businesses, and taking into account existing processes and procedures.

The training was designed to be delivered through instruction and discussion in groups, or through individual training workbooks. Each company was offered the whole training package, but could tailor elements to suit their specific needs or circumstances. For example, the training workbook could be modified to cover a particular issue such as manual handling. The package was intended to be embedded in the organisation after an initial period of training on-site, so that it could be integrated with the company's culture and be consistent with company strategy, rather than stay an isolated 'add-on'.

The companies were asked to organise safety and health appraisals to increase employee awareness, integrate safety and health into broader organisational values, identify areas for specific training and improvements, and set safety goals and targets. The training package covered the effective use of appraisals and the identification of training needs.

At management level, safety leadership workshops were aimed at providing managers with the skills and knowledge to help them promote safe working practices. Classroom-based lectures were supplemented by discussion groups to stimulate the audience and inspire ideas.

Twelve months after the training initiative had started, the team looked at reports of minor injuries and accidents. It also measured trainees' motivation, safety knowledge, safety behavior and safety perceptions. In addition, the researchers assessed managers' safety perceptions and leadership style.

The research team repeated the measurement exercise 24 months after the original training, to establish the longerterm effects of the training programme.

What did our researchers find out?

The study showed that the broad-based training programme continued to have a significant positive effect two years after it had been delivered.

The main findings included:

- the reduction of minor accidents
 - by 22 per cent, on average, over the 24 months

- a more positive safety climate over time - the improvement of safety communication, training, safety systems, work environment and work pressure after 12 months, with the same levels maintained after 24 months.

Safety motivation increased significantly, although there was no meaningful change in safety knowledge or involvement over the two-year period. Employees' perceptions of company safety were more positive 12 months after the training, and this improvement was retained at the end of the 24 months. The improved perceptions of the effectiveness of safety communication, training, safety systems, work environment and work pressure found at 12 months were also demonstrated 24 months later, even though they didn't increase further. Employees' perceptions of the work environment saw the greatest improvements – but this wasn't matched by their attitudes towards managers or their perceptions of managers providing a supportive environment.

Employees' perceptions of a supportive environment from co-workers declined, in fact, over the two-year project. The researchers suggest this could be explained by a lower reliance on colleagues as the businesses became more effective at providing support.

Compliance and participation – safety behaviour – went up after the training, with the biggest effect being seen on participation. Interestingly, behaviour changed over a longer period than perceptions and attitudes – perceptual change was in the first 12 months, and behavioural change in the second 12 months.

Importantly, both managers and employees reported that the project was seen as successful, with a considerable impact on company safety culture and productivity. This impact became more significant over time.

The project's training programme had a positive impact on managers' safety perceptions, although company size made a difference – managers in the smaller businesses rated the safety climate as more improved than their counterparts in the larger organisations. And managers' leadership styles became more transformational over time, focusing on changing employees' safety values to align with the business. Managers reported a more engaged approach, for example, challenging employees' assumptions about safety, and encouraging more safety suggestions.

Barriers to running a successful training programme cited during the project included top-down management commitment to the initiative, employee willingness to participate and existing job pressures.

What does the research mean?

The University of Manchester's project demonstrates that safety training, when delivered in line with good practice recommendations, can have a significant long

term impact. This impact can be seen not just in a lower number of accidents, but also in a better, more positive company safety climate. Importantly, the change in safety culture found in the businesses that took part in the project didn't conflict with company productivity, as it was reported that this improved too.

The effects of the training initiative trialled in the study weren't limited to a particular sector or business size, meaning that the research can be broadly interpreted and applied.

The researchers developed a series of good practice recommendations as a result of the project findings. In brief, it recommended that training should be:

- tailored specifically to the company's needs, and based on safety and health appraisal processes
- embedded in the company's processes and procedures
- part of the company's overall strategy, and consistent with business objectives.

The 'Research into practice' section has more details.

Don't forget

All applied research has some limitations. Using control groups in the research sample would have made the study design stronger but, unfortunately, this wasn't possible for a number of reasons, including the fact that the small and medium-sized organisations understandably wanted to introduce the training initiative across the whole of their business, without isolating part of the company as a control.

The study didn't investigate the relative influence that different elements of the training package had on the outcomes across the sample, and as the package was designed for tailoring according to individual business needs, various components were selected from company to company. For example, training to improve safety systems was more extensively applied in small and medium-sized companies. The research programme also didn't test how appropriate different types of training were for individual companies. It is recommended that future studies of this kind carry out a training needs analysis at the start of the project to identify the most appropriate type of training.

Finally, the research team suggests that in a similar study to this, training should be validated soon after delivery as well as at the subsequent measurement times.

Research into practice: translating study findings into good practice guidelines

One of the key objectives of the University of Manchester team's work was to create a set of good practice guidelines for successfully implementing safety training, based on the study findings:

- **Tailored training** is likely to be more successful – instead of using generic 'off-the-shelf' training, the training package offered to the companies in the study sample was designed to target the safety and health issues identified by the businesses involved.
- **Safety and health appraisals** should be used to identify training needs – the research team asked companies to implement an appraisal scheme as part of the project, and it was subsequently embedded in the businesses on an annual basis, so that it became an established organisational process.
- Training packages should be designed so that they can **be integrated into an individual company's existing system**, and aligned to its business objectives – in the study, this meant that neither managers nor employees saw the training as separate from the company's general operations.
- Training packages should be **embedded in a company's processes and procedures**. During the research project, this allowed the positive benefits to develop over the first year and then be maintained for the second year of the study. The ongoing use of the safety and health appraisal system is designed to offer the opportunity to identify and implement further improvements beyond the first years.
- **Safety training should be considered as part of a broader safety programme** rather than simply as a way of improving safety knowledge in a single specific area, often associated with a more narrow compliancebased approach. In the study, the training was used not only to increase safety knowledge and skills but also to improve hazard awareness, and the findings showed that this had wider benefits, including enhanced safety motivation and participation.
- **Training should be positioned within a broader safety context** – the longer-term positive impacts on the safety climate in the sample companies demonstrated the importance of this, for example, the specific improvements found in targeted areas such as communication or work environment.
- Training for employees should run alongside a **development programme at management level** – the training workshops staged for managers in the

sample companies meant that their leadership style improved over the study period.

- **Training should be viewed as an investment**, not an expense. Benefits seen over the longer term, such as cuts in the number of accidents and lasting improvements to the safety climate in the companies studied, should be weighed against the barriers cited by managers, including competing priorities and lack of resources.
- **Senior management commitment** is integral to the success of this sort of initiative. During the study, managers' backing was instrumental in ensuring that, for example, enough of their employees' time was allocated to the project.

The findings can be generalised across sectors and different organisation sizes and are likely to be widely applicable – this is largely because the training package approach trialled in the study was designed to be customised to suit individual companies.

Our summary gives you the major findings of the independent project report by the University of Manchester. If you want to read about the study in more depth, you can download the full report at [iosh.com/research](https://www.iosh.com/research).

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