



reducing human error

Behaviours in Business

THERE are many good reasons to target safe behaviours as part of an integrated approach to excellent business management. A significant percentage of accidents and serious errors can be linked directly to unsafe behaviour, which occurred prior to, at or near to the time of the accident. There are several ways then to reduce human error in business some of which are discussed below such as Human Performance, Attitudes or Behaviours, Situational Awareness and Human Factors.

The upper part of the accident triangle in the diagram (modification of the Bird triangle based on Keil Centre data 2000) demonstrates that as the severity of the accidents and incidents decrease, their frequency increases. The triangle is extended downwards to include unsafe behaviours – presenting opportunities to modify behaviour from unsafe to safe. Although this diagram infers a blue-collar environment, the data transfers equally into a white-collar environment such as banking for example.



Human Performance

Since the 1970s, a variety of behaviour modification techniques have been successfully applied to reduce unsafe behaviour. The emerging evidence demonstrates that – properly implemented – these programmes can be effective in reducing accidents, events and incidents. However, we have also seen evidence of many poorly implemented programmes, or programmes which for other reasons did not achieve the promised improvements in safety performance.

While behavioural modification is a powerful technique it cannot replace other components of a successful safety management system (SMS) – its role is to compliment the SMS and it should be integrated within it. For example, when the contribution of the training, feedback, reinforcement and goal-setting components are evaluated, the training-only component achieves mixed results. The addition of feedback, goal-setting and reinforcement through support from management and peers produced significant additional gains in behavioural safety performance.

There is strong evidence that behaviour modification techniques are effective in improving safety, and through modifying unsafe behaviour can reduce accidents and injuries. An important question is the degree to which success depends on how such programmes are implemented, and the degree of management commitment shown. Many of the successful safety improvements reported in the behaviour modification literature have occurred when specialist consultants implement programmes.



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In such circumstances, control over how rigorously the programme is implemented does not rest wholly with company employees. This may limit the effectiveness of company-driven schemes, when implemented under suboptimal conditions by personnel subject to many other organisational demands.

So what **are** the key aspects of **attitudes or behaviour**?

It is often assumed that the most productive place to start when changing behaviour is with attitudes. If only the '*right attitude*' can be fostered, then surely the right behaviour is sure to follow? Unfortunately, the causal link between attitude and behaviour is weak. Nevertheless, the causal link the other way round, between behaviour and attitudes, is much stronger. If our behaviour changes and our attitudes do not, we feel uncomfortable, a state known as 'cognitive dissonance'. We tend to resolve this discomfort by changing our attitude to be consistent with the newly adopted behaviour. For these reasons, proponents of behaviour modification recommend targeting behaviour change first, not attitudinal change.

So what are the key principles and elements of a comprehensive behaviour programme? There are several well-established principles that underpin the modification of human behaviour.

- Behaviour can be measured – and to make measurement possible the behaviour you wish to change must be carefully-defined and observable.
- Behaviour is a function of its consequences – people will continue to behave as they do until either the consequences reinforce behaving in a different way or the consequences (or punishment) no longer reinforce behaving in the established way. By carefully analysing events prior to a defined behaviour (the **Antecedents**), the **Behaviour** itself and the **Consequences**, it is possible to gain insight into why people behave as they do. Using the results of this 'ABC' analysis, a plan is developed to change the antecedents and/or consequences, and thus increase desired behaviours and reduce problem behaviours.
- Behaviour can be modified by providing appropriate reinforcement and feedback – positive reinforcement, like thanks, praise, and support from colleagues and management, promotes behaviour change, whereas in an organisational context punishment, such as blame, criticism, or disciplinary action, is often counter-productive.
- Also, once behaviour has been measured, people need to see the results. Immediate, regular and specific communications are invaluable to enabling the success of any behavioural improvement programme.

Situational awareness

Some definitions:

SA is the ability to "**maintain the 'big picture' and think ahead**" (Dennehy and Deighton, 1997, pl.284).

SA is defined as the 'operational space' within which **personal and environmental factors affect performance**" (Dennehy and Deighton, 1997, pl.287).

[SA is] the degree of accuracy by which one's **perception** of his current environment mirrors reality" (US Navy website).



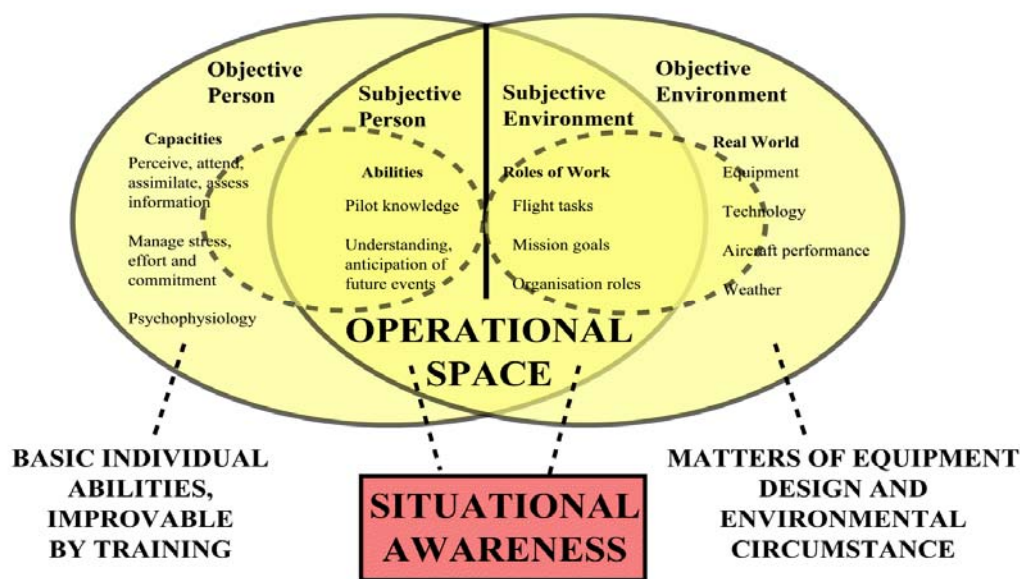
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"[SA is a] cognitive state or process associated with the **assessment** of multiple environmental cues in a dynamic situation" (Isaac, 1997, pl.185).

"[SA] can be thought of as an **internalised mental model** of the current state of the flight environment. This integrated picture forms the central organising feature from which all decision making and action takes place....(Endsley, 1999, p257.)

"[SA is] the **accessibility of a comprehensive and coherent situation representation** which is continuously being updated in accordance with the results of recurrent situation assessments" (Sarter and Woods, 1991, p52).

Excellent situational awareness is a critical personal attribute necessary for us to recognise and respond to stimuli to help us navigate our day (or night) safely, to make sound decisions based on our knowledge and experience and the information we have physically to hand. Situational awareness is a key standard for anyone working in a controlled or secure environment such as airports, hospitals, manufacturing, or where there is a safety or security risk to individuals, machinery etc.



Situational awareness programmes have to:

- Provide ethical perspectives of security, standards and behaviours, and decision-making to ensure awareness and encourage deliberation of the relationship between potential unsafe behaviours and society.
- Incorporate human behavioural standards, tools and techniques for front and back room personnel throughout an organisation
- Align the professional requirements of the organisation, society and membership of professional bodies
- Required interface behaviours between people and the machines/data they need to use



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- Realistic and timely information sources on risks and threats in the field in which personnel work
- The enablers for a responsive and learning organisation including consideration and development of individual capability, confidence and accountability to make ethical decisions based on their personal perceptions such as beliefs, cultures, experience and, conditioned thought or expectations (such as risk limitation) by the airport leadership. How to manage the time pressures associated with making these decisions and how those individuals then communicate the ethical decisions they have reached.
- Understanding why people behave in the way they do and how to help create responsible behaviour.
- Develop a systematic and process driven infrastructure and methodology to produce an appropriately mature organisation.

Ultimately, enabling, coaching and shaping individuals to perceive key models as they emerge, perceive 'oddness' in a situation, to make a best available information assessment of a developing situation and simultaneously create action plans to manage or control that situation whilst thinking ahead to the possible consequences is one way of stating ***situational awareness!***

Human Factors

Human factors involves the study of all aspects of the way humans relate to the world around them, with the aim of improving operational performance, safety, through life costs and/or adoption through improvement in the experience of the end user.

The terms *human factors* and *ergonomics* have only been widely used in recent times; the field's origin is in the design and use of aircraft during World War II to improve aviation safety. It was in reference to the psychologists and physiologists working at that time and the work that they were doing that the terms "applied psychology" and "ergonomics" were first coined.

Specialisations within this field include cognitive ergonomics, usability, human computer/human machine interaction, and user experience engineering. Although the names change, human factors professionals share an underlying vision that through application of an understanding of human factors the design of equipment, systems and working methods will be improved, directly affecting people's lives for the better.

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