

Effective health communication in the mining industry

Hugh Shannon¹ & Tony Parker²

¹Associate Lecturer & ²Emeritus Professor, Queensland University of Technology, Institute of Health and Biomedical Innovation

Introduction

Historically, occupational health and safety has primarily presented as attempts to create a safer work environment for employees. The mining industry carries health and safety risks, often greater than other occupations. Whilst the mining industry is regulated by stringent workplace health and safety regulations, the very nature of the work and environmental influences expose employees to a greater number of injury risk factors than many other industries. The application of risk management techniques has resulted in a substantial decline in injury rates observed for mining operations in developed countries (Donoghue, 2004). This essential focus can be complemented by a more comprehensive approach to occupational health and safety that also supports the design and delivery of proactive health promotion programs.

The collective health status of employees in workplace settings impacts upon industry in terms of productivity and economic expenditure. A healthy workforce has the capacity to generate a range of positive outcomes and employers that value and support workplace health promotion initiatives send important messages to their personnel and the wider community. Establishing a healthy workforce requires health education methods that effectively communicate information and support positive and lasting effects on health related knowledge, attitudes, values and behaviour.

Occupational health promotion

The workplace has been identified as one of the most important settings where health promotion can occur due to the potential for efficiencies, success and sustainability (Egger, Spark & Donovan, 2005; Bilski & Wierzejska, 2008). Despite this potential, many occupational settings do not facilitate health promotion programs or develop inappropriately planned, unstructured or unsustainable programs that are not appropriately evaluated (Egger, Spark & Donovan, 2005). Opportunities exist for the establishment of sustainable health promotion actions by addressing risk factors and barriers, enabling positive health behaviours and building social capital (World Health Organization, 1998).

In a mining industry setting, significant potential for workforce health improvement lies with chronic injury prevention and addressing both biophysical and psychosocial health issues. Adopting a forward thinking perspective requires an understanding of why health problems arise and the development of proactive and context specific

initiatives. In order to gain a complete understanding of health issues, it is necessary to consider the determinants of health and their positive or negative impact on health status.

Communication practices

Miners are normally required to undertake compulsory health and safety training when entering the workforce and regularly throughout their careers. A range of approaches to workplace health and safety training are currently used in the mining industry, to varying degrees of success (Cullen, 2008). Of equal concern is the absence or high variability of evaluation methods applied to health and safety communication practices within the industry (Parker, Hubinger & Worryingham, 2004). Mining operates on very tight time schedules, influenced by pressures associated with meeting production targets. Communication methods therefore need to be efficient and well planned.

There are a range of potential barriers to effective health communication that can emerge within complex and challenging work environments such as mine sites. Health related information delivered during crib room talks that include too many topics and other competing foci such as safety briefings is likely to be ineffective. In this situation, attention is devoted to the immediate priorities rather than longer term issues and key messages can be easily lost. The timing of information delivery is therefore essential.

The manner in which information is presented also requires careful consideration. Diversity in the workforce can present challenges which require context specific solutions. Workers for whom English is their second language or those that are primarily of a non-English speaking background are likely to experience significant difficulties when both verbal and written English language communication forms are used. Furthermore, workers who are of an English speaking background, but demonstrate low literacy levels may also experience similar problems. The use of information and communication technologies can present opportunities for efficiencies and convenience. If workers aren't familiar or confident with using the technology or don't have personal access to it, this may present yet another barrier to the communication process.

Adults demonstrate higher levels of motivation when they see the purpose and relevance of information (Knowles, Holton & Swanson, 2005). This life-centred orientation is also supported by cognitive neuroscience research. The limbic system of the human brain includes the amygdala which screens sensory input and appears to support an affective association with experience (Zull, 2002). This plays an important role in the process of neural plasticity, contributing to the way in which information is encoded within the brain (Azmitia, 2007; Will, Dalrymple-Alford, Wolff, & Cassel, 2007). Humans gain knowledge and meaning from experiences and learning is a social process supported by shared individual perspectives (Vygotsky, 1978; Bruner, 1996). Vicarious learning, which involves understanding the experiences of other people can also have a powerful, motivating and lasting effect (Schunk, 2008). Empirical research conducted by Sharot and Phelps (2004) has demonstrated that experiences which produced an emotional response resulted in

stronger recall which persisted or improved over time as the period between learning and testing increased from hours to days. Experience therefore serves as a valuable resource for adult learning (Osborne, 2005).

Adults also demonstrate a need to be self-directing, problem-solving and independent learners (Knowles, Holton & Swanson, 2005). Communication processes therefore need to allow workers to understand and evaluate information in their own context. The work environment should also support active use of this knowledge and key messages should be reinforced to promote ongoing positive behavioural responses.

A framework for understanding, planning and evaluating communication

Communication of information should have an impact on not only knowledge, but personal attitudes, values and most importantly health behaviour. Bandura, through his social cognitive theory (1986) emphasised that a person's behaviour is a result of interaction between three elements: personal characteristics, behavioural patterns and the social environment. The combined influence of these three elements represents Bandura's triadic reciprocal causation model (1997) which is depicted within figure 1.

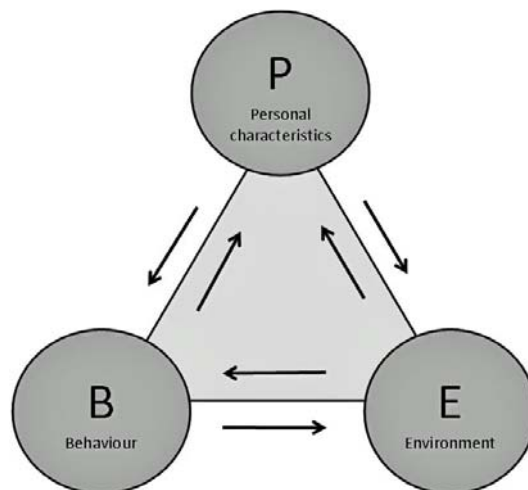


Figure 1: Bandura's triadic reciprocal causation model

Through this model, health behaviour can be understood in the context in which it occurs, either within or outside of the work environment. Another concept that should also be carefully considered when attempting to understand and evaluate communication, knowledge acquisition and health behaviour is health literacy. The concept of health literacy has evolved over the last forty years from an individual, literacy driven focus in clinical settings to one that represents a contemporary health promotion perspective. The World Health Organization has defined health literacy as *'the cognitive and social skills which determine the motivation and ability of individuals to gain access to, understand and use information in ways which promote and maintain good health'* (World Health Organization, 1998, p. 10). Nutbeam (2000)

further elaborated on this definition by developing a comprehensive three level health literacy model that identifies and distinguishes different domains. Functional, interactive and critical health literacy relate to the ability of individuals to understand information and the corresponding impact on health related attitudes, values and behaviours. This model recognises differing levels of autonomy and empowerment as individuals demonstrate higher level capacity and action. A summary of the model is presented in figure 2.

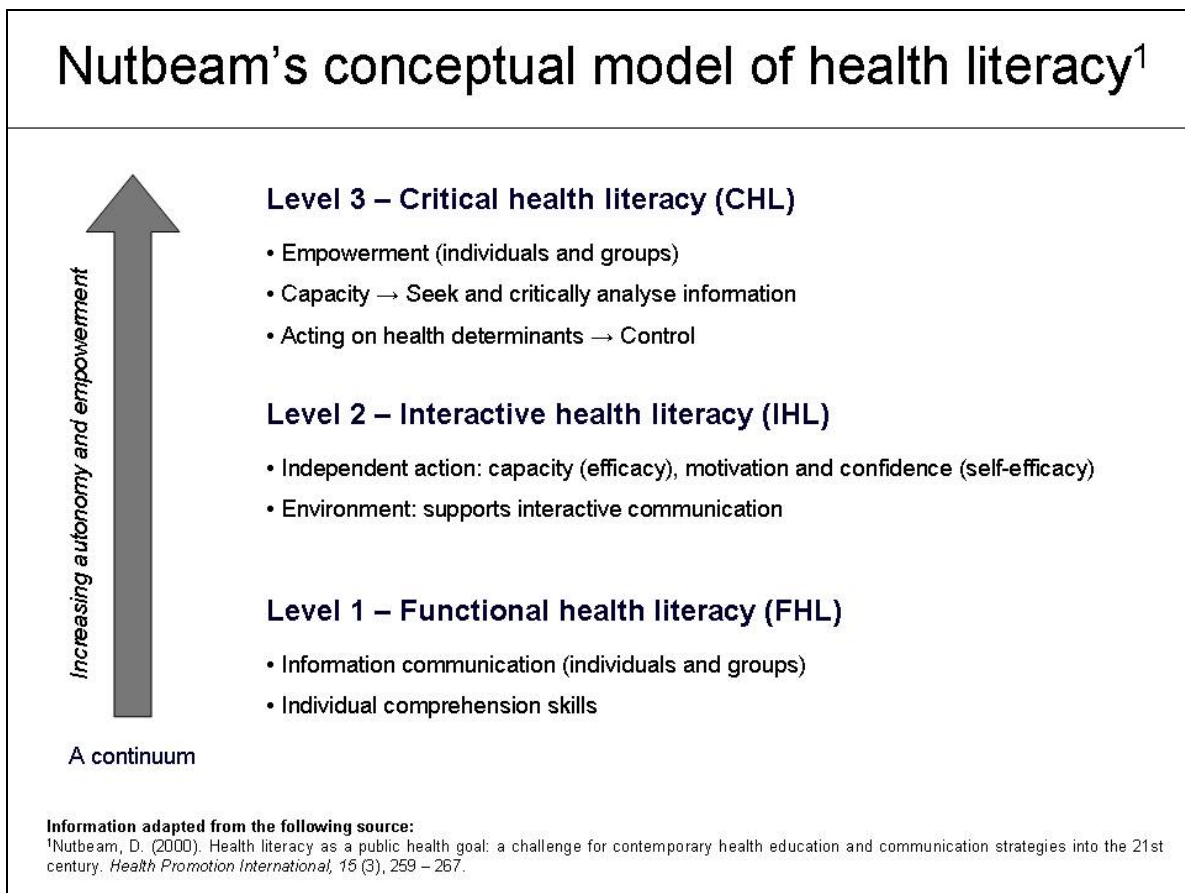


Figure 2: A summary of Nutbeam's three level conceptual model of health literacy

While the concept of health literacy can be considered from both planning and evaluation perspectives, it is necessary to develop a process for facilitating such action. The five step process by Springett (2001) presented below provides an example of how a systematic and integrated approach to evaluation can inform future practice.

1. Identify project objectives
2. Develop evaluation questions
3. Decide how questions will be answered
4. Collect and analyse information
5. Draw conclusions and make recommendations

Summary and recommendations

- A health promotion focus within a broader occupational health and safety orientation supports workforce sustainability.
- Establishing a healthy workforce requires health education methods that effectively communicate information and support positive and lasting effects on health related knowledge, attitudes, values and behaviour.
- There is a need for carefully planned and evaluated communication methods.
- Potential barriers need to be identified through a context based assessment.
- Principles of adult learning include purpose, relevance, experience, self-direction, problem-solving and independence. These principles are supported by cognitive neuroscience research.
- Bandura's triadic reciprocal causation model identifies the associations between a person, their health behaviour and their environment.
- Communication methods should primarily develop knowledge, however they should also influence attitudes, values and health behaviour. Development of increased autonomy and empowerment occurs as higher levels of Nutbeam's health literacy model are reached.
- Communication methods need to be efficient, high impact and timely to be effective in the complex and challenging mining environment.
- Prioritise quality of information over quantity.
- Reinforcement and a supportive environment (work and beyond) are essential for motivation and longer term outcomes.

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