

Learning safety in the building industry

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Abstract

Purpose: The purpose of this research was to increase understanding of how subcontractors in the domestic housing industry construct their safety knowledge, so as to improve safety training in that industry.

Methodology: An ethnographic methodology was used, and data was collected from an oral survey, participant observations, semi-structured interviews, investigator diaries, and document analysis. It was iteratively recorded and coded for emerging themes. The paper interprets this data using cultural analysis, and extrapolates to theorise the usefulness of a learning circle approach to certain types of mandated safety training in the construction industry.

Findings: Subcontractors have a knowledge of safety that is embedded in their work practices. They distrust the safety knowledge imposed upon them by a powerful bureaucracy and are resisting efforts to enforce compliance. However, they demonstrate a passion for reflectively evaluating their own performance and are willing to negotiate innovative culturally sensitive behaviour modifications into their safe work practices.

Limitations: The propositions from this paper now need to be developed into a number of research questions and trialled. It has not provided empirical validation, but opened up and theorised a line of inquiry.

Practical Implications: It has exciting implications for incorporating learning theory into safety training in order to improve safety outcomes in the construction industry. It may also have implications for safety training in many other industries.

Originality: This paper explores new territory in terms of safety training, with very little research completed to date on this topic.

Introduction

This paper presents an analysis of some aspects of a research project that explored attitudes to occupational health and safety (OHS) held by subcontractors in the domestic building industry. It was conducted because a large amount of anecdotal evidence gathered by the researcher strongly suggested that there was a growing culture of resistance to modern OHS legislation among subcontractors in that industry, and that this was precipitating minimum compliance OHS behaviour rather than best practice.

I firstly provide a brief overview of the OHS situation in the construction industry and discuss some effects of culture on risk perception in that industry. I then theorise and argue the research design, describe the research process, its suitability and the reliability/validity of results. The discussion explicates the formation of subcontractors' safety knowledge and problematises how the construction workplace culture influences attitudes to OHS. It portrays the current OHS implementation and enforcement strategies as a contested arena of negotiations heavily influenced by the power and interests of the competing stakeholders. The evidence suggests that improved OHS outcomes may be compromised if the cultural values, norms and social structure of the industry are either ignored or marginalised.

Literature Review: Setting the Scene

Significance of the problem

The construction industry is extremely important to Australians and to the economy. Buildings and structures continuously touch our lives, and in 2002-3 in NSW, it was the fourth largest industry (ABS 2004, p.1). It is a high-risk industry (Stromm 2001, p. 1) with a high incidence of workplace deaths, injuries and diseases (WorkCover 2001, p.5) and a poor safety record (Blockley 1996, p.51). According to Worker's Compensation statistics, the construction industry of NSW has the third highest incidence of employment injuries (WorkCover 2005a, p.11) and the second highest number of work-related fatalities (WorkCover 2005a, p.18) of all industries in NSW. The incidence

of injury in the construction industry throughout Australia is 50% higher than the all industry rate (Breslin 2004, p.564).

Subcontracting has become a major feature of the construction industry and Silberberg (1991, p. 1) asserts that subcontractors make up approximately 90 % of workers in the domestic housing segment of the industry. About 94% of businesses in the industry employ less than 5 staff (ABS 1999, p.1), and construction has the highest number of non-employing businesses of any industry (ABS 2002, p.10). WorkCover's injury statistics are derived from workers compensation information, and most of the 'own account workers' in the construction industry are sole traders who are not included in the workers compensation system. Hence, the official injury statistics do not accurately reflect the true injury situation. To illustrate this point, an examination of workplace injuries presenting at the Emergency Department of fourteen Queensland hospitals revealed that considerable differences exist between compensated injury data and Hospital Emergency Department data in terms of industry representation and injury type (Queensland Injury Surveillance Unit [QISU], 1999). The construction industry made up only 7% of compensated injuries yet represented 24% of work related injuries presenting at those hospitals' emergency departments (QISU 1999, p.4). There is mounting evidence that this shift to subcontracting is having negative health and safety effects on these types of workers (Quinlan 2003, p.4). Hence, management of subcontractors is a key feature in the success of any OHS management system in this industry (WorkCover, 2001, p.28), yet subcontractors have received little OHS research despite their importance to the construction industry and the Australian economy (Mayhew et al, 1996, p.61).

Johnstone (1999) found that subcontractors who work in domestic housing had poor understanding and awareness of OHS requirements. The National Occupational Health and Safety Commission (NOHSC) concluded that the domestic housing segment was not introducing OHS as effectively as other sectors of the industry (NOHSC, 1999, p.68). However, there appears to be very limited research targeting OHS in the domestic housing industry, which can mean poor policy (ACIL, 1996, p.xii): 'Redressing this situation should be a matter of priority' (ACIL, 1996, p.54).

Koesmargono (1998, p.32) found that 'safety performance is primarily affected by individual's attitudes towards safety'. However, he did not actually explore those attitudes and strongly recommends that 'the construction industry should focus its efforts on a better understanding of workers' attitudes to safety' (Koesmargono, 1998, p.xx), as 'attitudes will determine their behaviour' (Silber, 1967, p.4, in Koesmargono, 1998, p.30). Ireland (1988, p.40) states that more attempts should be made 'to assess the real attitudes of tradespeople and labourers' in an attempt to better satisfy their needs.

Risk perception and culture

If the world were totally rational, consistent and quantifiable, risks could be logically and objectively ranked and universal control strategies enacted that would suit everyone. However, this is not the case because 'individuals perceive risks differently' (Petkovic, 1987, p.117), as do cultures, groups and communities of practice. Hazards and risks occur within a context, and this influences both the nature of the risks and the nature of the risk perception (Keey, 1998, p.93). Risk is something that might happen – risk is in fact immaterial and invisible and therefore dependent on interpretation. Consequently it is a matter of perspective (Adam and van Loon, 2000, p.4) and is constructed (Adam and van Loon, 2000, p.2). The essence of risk 'is not that it *is* happening, but that it *might be* happening' (Adam and van Loon, 2000, p.2). Risk is therefore uncertain and intangible.

Cultural studies suggest that groups construct risk interpretations collectively and that people view risks 'through a culturally tinged lens' (Joffe, 1999, p.71). The meaning of the risk is collectively constructed by the people in the group. Risk should be analysed in terms of how it is perceived by the individual in his or her social environment and the options available as understood in that environment (Zegans, 1991, p.263).

Holmes and Gifford (1997) used a qualitative method to study risk perception among employers and employees in the Victorian painting industry and found that the social context of work shapes the ways that risk is understood, as social meanings of risk in the workplace may differ between different groups (Holmes and Gifford, 1997, p.11). A common theme emerging was that 'both groups shared an understanding of their industry as a hierarchical social structure through which risk was produced' (Holmes and Gifford, 1997, p.13). The narratives of risk for both groups centred

on the production and control of risks resulting from specific relations of power between and within different levels of the social structure (Holmes and Gifford, 1997, p.13). Employers viewed risks as mainly economic, while employees focused on their tools, substances and type of work. Holmes and Gifford (1997, p.15) suggest that OHS strategies that focus purely on individual behaviour change without regard to the social structure 'are unlikely to be successful' while the narratives suggest that underlying conflict will emerge over strategies that focus solely on technical measures of risk control.

WorkCover's enforcement of individual behaviour change and technical measures are based on a philosophy that views learning as a product, and the individual's mind as a container into which 'knowledge-as-a-substance' (Lakoff and Johnson, 1980, in Hager, 2004, p.5) can be poured or transferred. This will supposedly take place at various WorkCover inductions, the objective of which 'is to *provide* participants with knowledge of the health and safety issues that are relevant to the construction work activities undertaken by a particular industry sector' [my italics] (WorkCover, 1999, p.11). It will be further enhanced by written information presented in such publications as Codes of Practice. This 'technical rationality' (Schön 1983) approach presupposes that there are general solutions to practical problems that can be solved through theoretical analysis and translated into action by means of publications (Hager, 2004, p.7). The hidden agenda behind this statement dismisses the knowledge that the workers already possess as not real or true knowledge, and continues with the wounding process of marginalizing identities by disempowering people.

Subcontractors are quick to expose this myth, as they invariably pose the hard and real questions that Codes usually sidestep. The trouble for the technical rational approach is that the workplace, and especially the construction workplace, poses many problems that do not fit into neat categories. Building workers are constantly faced with non routine situations that require novel solutions and the creation of new strategies.

Bourdieu's concept of 'habitus' (Bourdieu 1972/1977) suggests that subcontractors are not individual machines who can be re programmed by simply supplying them with new rules and information. Their subjectivities are emotionally attached to their practice – they "care" about what they do and why they do it. They are intrinsically enmeshed in the 'webs of significance' (Geertz, 1973 p.5) of the construction industry culture. Changing their behaviour therefore necessarily means engaging this culture and addressing the structure of the industry. The construction safety culture is amenable to change because new information or social forces can and do influence it. However, it is endowed with the inertia of the autopoietic system that reinforces traditionally accepted approaches. This paper will demonstrate that the energy surrounding OHS within the construction industry can be constructively used as a springboard to trigger the innovation required for subcontractors to realign their safety culture with best practice models of OHS management.

I argue that the implementation of OHS in the domestic housing sector of the construction industry could be a smoother process if the culture of the industry was taken into account when designing intervention strategies. Covello and Johnson (1987, p.xi) and Fitchen et al (1987, p.50) state that the way one frames or presents the risk information effects the way it is received. It is in this framing stage that the decision maker 'constructs a representation of the risk' (Kahnemann and Tversky, 1992, p.46). This critical stage is what sets up the motivation to respond. Understanding this is essential for successful communication and training in OHS, as subtle and not so subtle power relationships define what information is made available, how it is packaged (O'Riordan, 1990, p.300), and how it is received.

Research Design

The focus of this research was to increase understanding of the risk perception of subcontractors in the domestic housing segment of the construction industry and explore their attitudes to OHS. My aim was to talk to and listen to subcontractors from the domestic housing industry with the objective of finding out what they think, feel and do about safety at work. The desired outcome was to find some way of addressing the safety situation in the building industry. A particular interest of mine was to try to understand how subcontractors learned to work safely and what constituted their safety knowledge so that OHS training can be improved.

The main purpose of my study was exploratory. The literature review revealed that there has been very little research conducted to gain insight into how subcontractors understand OHS and what it means for them. I wanted to deconstruct subcontractors' subjective experiences and how they give meaning to their own situation. Therefore, I thought it was best to use a qualitative theoretical framework on which to base my research methodology. The quantitative perspective may have had difficulty in allowing for attitudes to be made explicit, especially in the absence of current substantive research that describes those attitudes.

The principle methodology employed for this research was ethnography. Ethnography is an act of sense making in which the researcher attempts to uncover multiple layers of meaning held by the group being studied (Barab et al, 2003, p.3), capture the personal experiences of participants and explore their complex social situations (Punch, 1994, p.84). The ethnographic approach allowed for the subjective understandings of the realities of the subcontractors to emerge, and for a cultural analysis to be applied to their words.

Somerville (2005) has suggested that ethnographic methods are extremely suitable for research into workplace cultures. In her study of learning safety in the mining industry she found that 'cultural analysis can explain how worker subjectivities, including learning and practising safety, are constituted within these workplace cultures' (Somerville, 2005, p.2). She believes that cultural analysis can help identify a 'potential locus of change' (Somerville, 2005, p.21) that one can use to mobilise workers to 'intervene in their own workplace practices' (Somerville, 2005, p.2). Eales and Spence (2005, p.203) suggest that the ability to identify and manage these 'cultural levers' will help facilitate ongoing change. I believe that unless we identify and understand these cultural norms and use them to inform our strategies for implementing OHS change, we will have limited success in creating a safety culture of continuous improvement.

The data was collected through a combination of a short oral survey of 158 subcontractors, participant observation, in depth semi structured interviews with 11 subcontractors from 6 different trades, investigator diaries, and document analysis, and was simultaneously and iteratively recorded, analysed and coded into emergent themes. The data was often interpreted from a critical perspective. Critical theory works from the premise that people 'inhabit a world of contradictions and imbalances of power and privilege' (Pasco, 2003, p.6), and I felt that this analytical lens helped to make sense of higher order ideas emerging from the data.

Reliability of results was enhanced through triangulation, and validity was strengthened by my emic connection with the industry that made it difficult for the participants to mislead me, deceive me, or gloss over things. My working relationship of equality with the interviewees helped to address issues of power and perspective, which is essential when determining what version of culture is written (Barab et al, 2003, p.3).

Findings and Discussion

A complex picture emerged of the safety discourse of subcontractors, their workplace culture, and in particular, their safety culture. The construction industry is a male dominated workplace with traditional masculine values such as toughness, resourcefulness and independence. It has an oral tradition in which adventurous and risk taking behaviour is often glorified as heroic. Site life is dusty, dirty, noisy and uncomfortable. There is a long tradition of workers socialising at smoko (vernacular for 'morning tea time') and lunch, which reduces ennui and affords the feeling of belonging to this cultural space and place. All peoples are embraced if their work is of high quality, while people who produce poor quality workmanship may be marginalised and remain peripheral. It is a practical industry in which people create tangible articles using the tools and skills of their trade. Most valued learning is informal and on the job, and much knowledge is tacit, embodied, rarely articulated, and almost never written: traditionally, the industry is based on doing and not writing about doing. It has a relatively flat management structure with the builder holding the positional power. The better builders often hold personal power based on their expert knowledge and skills and their personal qualities and attributes that lead people to respect them (Cole, 1998, p. 124-125). To be successful, subcontractors must be fiercely independent as every decision affects their viability as a business.

The safety culture is a subset of the workplace culture. It is not fixed but dynamic, flexible and contested. It is contingent upon the forces within the industry, and is maintained in a state of

tension. Safety decisions are made continuously 'on the fly' (Fenwick, 2001, p.251) on a house building site because all processes are more or less hazardous and potentially risky. It is in the interests of subcontractors to avoid injury because if they cannot work they do not earn any money. Hence, they must maintain a balance between financial security, independent action, and contingency management.

The people who constitute the construction industry culture share some common perceptions of risk. They believe that construction sites are reasonably safe for them, but not for outsiders like owner builders, women or children, who do not understand the construction site. They are unanimous about not liking the paperwork requirements that are reifying OHS legislation. They seem to perceive short term financial risk as more important than personal safety. They all accept that building work degrades the body, but continue with it because it pays the bills. They often view the financial risks represented by WorkCover's enforcement as more hazardous than continuing with their present work procedures. Their reluctance to spend money on OHS is related to the fact that they have very tight profit margins resulting from the competitive tendering process that sets prices at a minimum. Subcontractors' subjectivities represent a balance between structure and agency, and are constituted within and influenced by the 'latent conditions' (Reason, 1997) created by the history and culture of the industry that favours costs and production over worker safety.

The introduction of modern OHS legislation presents an imbroglio with several binary conundrums. For example, all participants in this research want to be safe at work, and almost all think that construction sites could be safer. However, most of these fail to see OHS as something that is beneficial to them, but rather, view it as an unfair imposition upon their already stretched resources of time and money. They believe that many of the rules do not actually address their real safety concerns such as repetitive movements, constant manual handling, poor organisation of the construction process, poor coordination and communication between trades, unclear areas of responsibility, and the noisy/dusty working environment.

Stories are circulating like wild fire that reinforce these sentiments and opinions. And, just like Foucault claimed, the powerful bureaucracy that is attempting to dominate and subjugate is being met with resistance (Foucault, 1980, in Linnell and Cora, 1993, p.11). It is not an armed struggle (although there are stories circulating glorifying hero building workers who have violently resisted) but a passive resistance in which building workers do as little as they can to comply. This is often taking the form of simulated paperwork compliance, termed 'degenerate OHS activity' (Berger, 1999, p.52) by Berger, who states that 'All too often....instead of directly reducing hazards and risks on the shopfloor or site, interventions are cynical paper-shuffling exercises sprinkled with jargon' (Berger, 1999, p.52).

Throughout the history of the building industry, safety has been part of and integrated into building workers core business activities, but not necessarily enunciated or defined anywhere. A literature review of the housing industry discovered that much of the literature is limited in scope, informal, anecdotal, and with very few peer reviewed books or journal articles (ACIL, 1996, p.54). Safety knowledge is often tacit knowledge and is learned as part of learning how to perform the job properly. The majority of their learning at work was and is informal, incidental, and based in praxis rather than codified theory, with up to 60% of subcontractors having no formal trade qualification (ACIL, 1996, p.xi). Their safety behaviour is a result of heuristically making iterative judgements about the hazards and risks they face. Historically, the construction workers have defined this process for themselves and have developed a culture that integrates safety and work. Now, government has legislated what risks are permissible and what risks are not.

In response to the open ended oral survey question 'How did you learn to work safely?' asked to 150 course participants, the most often cited response was 'Common sense' (25%), followed by 'Mistakes over the years' (13.3%), 'Stories from others' (13%), 'Thinking ahead' (12.6%), 'From other jobs' (10.7%) and 'Watching others' (9.5%). Low response rates were for 'OHS courses' (1.3%) and 'School' (1.3%). These results suggest that subcontractors place an enormous amount of trust in their own common sense to help inform their safety judgements and decisions. This trust in their own decision making is fundamental to their success as subcontractors because they are constantly required to make accurate practical judgements in the specific contexts of ever changing workplaces. Common sense is in fact reflective practice, and many of the decisions reached through common sense come from reflecting upon their mistakes, exchanging stories, and

involvement with others at work. It is developed and informed through participation in the process of performing construction work, which means common sense is learned, is not fixed, and is amenable to change as new circumstances challenge previously held conceptions.

There are at least three layers of safety knowledge imbricated in the construction industry. Firstly, safe work means that the individual contractors must have their own safety knowledge specific to their trade. Most subcontractors believe they possess this kind of safety knowledge. The second layer of safety knowledge consists of shared understandings of how to work together across those trades. Most agree that this area could be improved. A third layer of safety knowledge is now being imposed by legislation and enforced by WorkCover. This knowledge exists outside the subcontractors lived experiences and is being forcibly thrust onto them by people exterior to the industry, whose power is based on threat of force rather than perceived legitimate safety knowledge. This scenario is being played out as a struggle in the field of OHS between WorkCover who represents the official knowledge of power driven by global discourses of theory and market economics, and the embedded and embodied safety knowledge of the workers gained through a history of praxis, which is portrayed by those in power as inferior and not good enough. It is an attempt to usurp the power that the workers have over their own body, and subcontractors are resisting these attempts to disempower them. The resulting situation is that enforcement strategies are tending to not necessarily produce safer workplaces, as was intended, but paperwork compliance: that is, minimum compliance rather than best practice.

The OHS field can be seen as a clash of cultures where the negotiation of the 'incommensurable differences' (McDowell, 1996: 40) between WorkCover and the subcontractors is creating tension. There is a cultural divide (Lave and Wenger, 1991: 48) between the embodied safety knowledge of the worker and the cerebral safety knowledge of the powerful bureaucracy. The local conditions of the construction workplace produce knowledge valued by the workers who inhabit this cultural space, whereas the global discourse attempts to negate this and replace it with a knowledge of the new neo liberal market driven order.

OHS training represents the codified knowledge which experience tells them to be of little value to their practical knowledge so necessary for successful operation in the industry. Hence, workers often come to OHS courses with resistance. They distrust safety courses that attempt to privilege paper/procedural knowledge over practical, embedded and embodied safety knowledge. Within their own building industry workplace culture these same people feel powerful and validated. Training courses take them from a place and space of belonging and inclusion, and put them into a training room where they have never belonged and where they have previously felt excluded from learning technologies such as classrooms, tables, chairs, pens, paper, teacher-as-expert, timetables, and so on.

The OHS educator steps into this seething current of negative storying of OHS. How then can she/he facilitate a learning event that will help create a safer building site? Is safety knowledge something that can be packaged into neat units of competencies and deposited into the minds of individual workers? Will this 'banking' (Freire, in Vercoe 1998, p.57) style of education in which I, the so-called expert tell them what I think they need to know, change their attitudes and behaviours? Or will they walk out with the attitude of one of my research participants:

When we did the course, I totally believe it was nothing but a money thing, because it was a total waste of my time...and I didn't learn anything, and I went there wanting to learn what safety things I had to do.

This attitude is reinforcing the storying that is creating a culture of resistance to OHS.

Given this background, how can they be expected to acquire the competencies and use them at work to transform their workplace? It will not happen, or, if it does, they will do the least they can to comply with the prescriptive elements to avoid fines. A far cry from best practice in which they creatively try to excel and improve OHS because they want to. The challenge is to change these attitudes, beliefs and behaviours. We want people to leave the training event with a new storyline about safety. The new storyline reads like this:

OHS is a good idea. I want to improve my safety and the safety of the others around me. I will always try to do the best I can to make my workplace safer. I will continually

reflect upon my successes and failures and seek to improve. I will encourage others for the safe things they do.

The question is: How do we get people to re-story their approach to OHS.

How can this be achieved? How can we develop a pedagogical approach to OHS delivery for workers, many of whom 'have wounded relationships to learning from previous formal learning experiences' (Wojecki 2005, p.8), and whose experiences at work largely reinforce negative attitudes to OHS legislation and implementation.

My research has demonstrated that a significant proportion of construction workers' learning occurs informally on the job through reflective practice, and requires participation in the construction workplace culture. OHS training largely disregards this and views OHS learning as the acquisition of cognitively acquired individual competencies that will somehow be transferred to the workplace. This is disrespectful to the workers and ignores risk perception research, cultural studies, and adult education principles. However, there is some literature starting to address the importance of the cultural aspects of safety and the shared understandings within an organisation, exploring such concepts as 'collective mindfulness' and 'risk awareness' (Hopkins, 2002 and 2005).

Nonetheless, to my knowledge, there is no OHS educational material that outlines the value of culturally sensitive reflective practice, despite it being used in other industries as a tool for education and training. Reflective practitioners analyse a problem, seek to understand it within their context, think about the results of their actions, and puzzle over why things worked out like they did (White 2002, p.2). Reflective practice can be understood as the 'ability to evaluate critical incidents within daily work, using this evaluation as a means of improving practice and knowledge' (Macfarlane et al 2005, p.50). The reflective practitioner is one who provides space for 'new possibilities to be explored and realised' (Moss and Petrie 2002, in Macfarlane et al 2005, p.50). An essential feature is that knowledge is constructed rather than reproduced. In the following quote from my research, the tiler is struggling to create new knowledge, a new way of doing things to protect himself

There's one that I haven't really come to grips with yet, but I've heard of um, when you cut with a saw, you cut a tile with a saw, the glaze is actually silicon based, and that dust causes silicosis, so coming to grips with that one is really difficult. You can put a mask on and it's a bit of effort, but still you can put it on but then you've gotta sit there for five minutes while the dust dissipates, you know what I mean. So it's a big one to come to grips with.

This reflective way of thinking is part of the construction industry culture and helps construction workers build up a 'reservoir of insights and intuition' (White 2002, p.2) which enables them to problem solve in their many non-routine situations. This process is not formalised, nor is it named in the construction literature, but an examination of the storylines of the research participants reveals a strong culture of reflective practitioners. Hence, it may be beneficial to provide them with a safe place and space in which critical reflection can be modelled, trialled, explored and mentored. This could be achieved in a classroom situation facilitated by a skilled and experienced person who poses relevant and context specific questions, or allows the class participants to pose their own real life questions.

The OHS educator needs to accept workers as valid people and treat them with respect. Listen to their stories, listen to their frustrations and validate their knowledge and their feelings. Find out what safety knowledge they already have and build on it. This will help structure the scaffold for them to be able to consider ways to improve their own safety and comply with OHS legislation. The trainer can work with learners to 'create new learning opportunities and experiences that help to reshape or open up possibilities with one's designated identity, [so that] new futures can be imagined' (Wojecki 2005, p.7).

The trainer will encourage interpretive reflection which will critically evaluate old practices in a culturally cohesive setting and encourage the group to pool their knowledge and skills to create the new knowledge required. The new knowledge will need to be unencumbered by the grand narratives that dominate site life, such as 'building work is dangerous – there will always be

accidents and injuries', 'it costs too much', or the tendency to blame the injured worker for not being careful enough. If they are supported in the critical reflection process within their cultural group it will have a 'powerful effect on the degree to which they are supported in letting go of older ideas and practices and attempting new ones' (Branford and Schwartz 1999, p.81).

Currently much of the reflective practice within the building culture occurs informally on the job in small groups or off the job at social occasions. However, with no experienced person to guide it, these reflections do not necessarily result in critical reflection, but are often constrained by the pervading underlying narrative of 'the way we do things around here'(Schein, 1992, in Hopkins, 2002, p.5). To maximize the benefits of the learning constructed through their informal reflecting, 'people need to bring what they are learning into conscious awareness' (Watkins and Marsick 1993, p.26). OHS courses that use the reflective practice model may help refine and polish the reflective practice toolkit already possessed by construction workers.

Learning circles that teach and encourage the skills of critical reflection are being trialled successfully in the Bachelor of Human Services (Child and Family Studies) at Griffith University in Queensland (Macfarlane et al 2005). The learning circle provides an opportunity for self directed learning through 'shared inquiry and dialogue' (Karasi and Segar 2000, in Macfarlane et al 2005, p.53). These learning circles encourage students to become more self reflective, metacognitively aware and self directed learners. They find that the approach helps develop such soft skills as communicating ideas and information, working with others and in teams, and planning and organising activities. These are three of the Mayer Key competencies identified by Hager et al (2002, p.14) as critical for successful OHS outcomes, and Wadick (2005) as lacking on house building sites with negative implications for OHS.

These three Key Competencies are especially critical for supervisors on construction sites, such as builders, head contractors, site forepersons, and so on. Work activity training for supervisors as detailed in the code of practice could address these issues using a critical reflection model. The Construction Industry Action Plan (WorkCover 2005c, p.24) makes supervisor training a priority and suggests a review as part of the OHS Regulation review. It further proposes that mandatory VETAB accredited competency based courses be developed and implemented. It is crucial that these courses address the three Key Competencies in a culturally relevant environment of critical reflection. These are not just technical skills that can be learned by 'doing a module' on each, and then transferring the learning to the workplace. These skills need to be learned through doing; they need to be practiced and mentored. A series of classroom based learning circles and even site visits may help facilitate the learning of all three skills. To further encourage the take up of this kind of training in an industry that resists formal training, work activity and supervisor training could be included in the NSW Department of Fair Trading's approved courses that attract Continuing Professional Development (CPD) points towards licence renewals.

Conclusions

This paper has discussed risk perception and working safely in the building industry. It was found that the construction workplace culture influences the safety culture of the subcontractors who work in the industry. Subcontractors want to be safe at work, but working safely is compromised by such competing forces as time/money pressures, the nature of the work, the power and position of the builder, and the interrelationships between the trades. Modern safety requirements are often perceived as threats because they reduce efficiency and compete for resources, without showing any tangible benefits. OHS reform will not create a best practice safety culture unless it addresses these cultural imperatives of the industry.

Safe working behaviour needs to be understood as more than following a list of rules, as this often results in minimum compliance. It would be better seen as a state of mind in which a person is always trying to think of safer ways to do things. I have demonstrated in this paper how a learning circle approach to OHS training in the construction industry may encourage and develop the critical reflection of construction workers. This will help them to mobilise their own energy to creatively innovate new culturally accepted practices that will improve their safety at work. This proposal is being more fully developed into an empirical longitudinal action research project that will test the practical application of my theory.

Modern OHS legislation defines the management of OHS purely from a technical perspective. It focuses on individual behaviour change and technical measures, and pays little attention to the social structure of the industry. Legislation has decided how to interpret hazards and risk, and ignores, minimises, or denigrates the embedded and embodied safety practices that have developed over many years of praxis. In reality, many of these practices in the construction industry are not safe, as the high incidence of injury and disease in the industry attests. The safety culture of the construction industry believes it is a dangerous industry in which injuries are to be expected, and tends to blame the injured worker for not being careful enough. It would be better if construction workers believed it is an industry where working safely poses challenges that can be overcome with careful consideration. The question for legislators and enforcers is how best to change this perception.

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