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SITE WORKER PERCEPTIONS OF SAFETY CRITICAL ROLES AND THEIR ACTIONS: IMPLICATIONS FOR CULTURE CHANGE IN CONSTRUCTION ORGANISATIONS.

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1. INTRODUCTION

Cultural and/or behavioural change is an outcome and goal often sought by construction companies seeking to improve site safety (O’Toole, 2002; DeJoy, et al., 2004). Safety Culture is a popular concept because it is a useful method for understanding how the behaviours and actions of the organisation’s leaders influence the behaviour of those on the frontline (Barling, Loughlin & Kelloway 2002; Cox, Tomas, Cheyne, & Oliver, 1998; Glendon & Stanton, 2000; Williamson, Feyer, Cairns & Biancotti, 1997; Zohar, 2002). As a consequence, a logical approach to improving an organisation’s safety culture is to provide management and leadership training to key staff so that they are equipped to model the appropriate safety behaviours and make the “right” decisions regarding safety (Biggs, Sheahan and Dingsdag, 2005). Unfortunately, the human and resource implications of undertaking training to a level that would have any meaningful effect on safety culture is large and may take a long time. The cost and time barrier may result in “quick fix” type of training. In the first place the Australian construction industry relies overly heavily on generic training which may not have a direct impact on safety performance; primarily because it does not target the correct safety competencies; nor is it intended to improve safety culture; nor does it reach the most appropriate employees, (nor management). For example, every manager may attend a one or two day generic training course that seeks to change long held, attitudes, mindsets and behaviours. Much training is steeped in competency based principles which can have a major role in attaining the required skill competencies as well as the necessary safety behaviours, but the correct competencies must have foundation in appropriate educational values and technique. Moreover, the trainers may be poorly trained themselves and they may not have the appropriate educational qualifications, or the necessary communication skills. The result is that the cornerstone of safety culture, which is that safety is based on a shared ideology, i.e., the values, norms and behaviours or that ‘safety is everybody’s business’ in safety cultural terminology, is not getting through to the correct recipients because the essential message is miss-directed and it is also miss-communicated owing to the poor quality of the training and a lack of training in effective communication technique (Dingsdag, Biggs, Sheahan, 2006)
It is argued that this type of training / developmental programme is unlikely to have a real or lasting impact on safety culture. A more cost efficient, as well as a safety performance oriented, approach to training is to target particular roles for training on specific skills and abilities. Hence, it is important to identify which are the most influential roles on a construction site and which specific behaviours the role holders need to undertake to improve site safety culture. This research sought to address this issue.

2. METHOD

2.1 Participants

A survey was administered to site based workers via contacts with primary contractors (12 companies in total). A bundle of surveys was given to the site OHS officer or site manager to distribute to workers. The target populations were workers on large commercial and civil construction sites across Australia (not housing and residential). 107 responses were returned via self-addressed pre-paid envelopes. (See the demographics in the results section of this paper).

2.2 Instrument

The survey consisted of an information and consent sheet (adhering to university ethics requirements) that outlined the project and what participation in the survey would involve consisting of a one page questionnaire. (See Table 1 below for a list of the items of the survey instrument). To maximise the likelihood of participation, the survey was intentionally kept brief and simple. Participant comments were transcribed into Microsoft Excel and then coded by the researchers into themes.

| Q1   | What State or Territory do you currently work in? |
| Q2   | How long have you been in the construction industry? |
| Q3   | What job do you do? (Eg. Labourer, Plumber, Electrician etc) |
| Q4   | Are you a sub-contractor? Please circle ___Yes / No |
| Q5   | Are you employed through a labour hire company? ___Yes / No ___ |
| Q6   | What do you think are some of the things that people can do on-site to make it a safer place to work? |
| Q7   | Please write down the three roles / positions within the construction industry that you think have the most impact or effect on how safe your workplace is |
| Q8   | For each of these three roles / positions, what are the sort of skills or knowledge they should have and the things they should do (behaviours)? |

Table 1. Items of the survey instrument

3. RESULTS

3.1 Demographics

Of the 107 participants, the vast majority were from the Australian states of Queensland, Victoria and New South Wales (see Table 2). This is reflective of the greater participant population and degree of commercial and civil construction underway in these three states.

Participants varied significantly in the length of time they had worked in the construction industry – the average was 15.8 years with a standard deviation of 11.5 years. Participants were from a range of different job categories (see Table 3). 81% of participants were not sub-contractors and only 5% were employed through a labour hire company. This low rate of sub-contractor participation in the survey at one level is surprising given their large representation in the workforce. Anecdotal evidence gathered through comments made on surveys and discussion with site based survey administrators, suggested that sub-contracting staff were not given time to complete the survey (unlike primary contractor staff).

<table>
<thead>
<tr>
<th>State</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>QLD</td>
<td>35</td>
</tr>
<tr>
<td>VIC</td>
<td>33</td>
</tr>
<tr>
<td>NSW</td>
<td>33</td>
</tr>
</tbody>
</table>
SA 2
WA 2
Missing 2
Total 107

Table 2. Breakdown of Participants by State

<table>
<thead>
<tr>
<th>Job</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Labourer</td>
<td>20</td>
</tr>
<tr>
<td>Plumber</td>
<td>11</td>
</tr>
<tr>
<td>Carpenter</td>
<td>9</td>
</tr>
<tr>
<td>Plant operator</td>
<td>9</td>
</tr>
<tr>
<td>Foreman</td>
<td>6</td>
</tr>
<tr>
<td>OHS</td>
<td>6</td>
</tr>
<tr>
<td>Advisor/Officer</td>
<td></td>
</tr>
<tr>
<td>Surveyor</td>
<td>5</td>
</tr>
<tr>
<td>Other</td>
<td>5</td>
</tr>
<tr>
<td>Landscaper</td>
<td>4</td>
</tr>
<tr>
<td>Rigger</td>
<td>4</td>
</tr>
<tr>
<td>Engineer</td>
<td>4</td>
</tr>
<tr>
<td>Union Rep / Shop Steward</td>
<td>3</td>
</tr>
<tr>
<td>Electrician</td>
<td>3</td>
</tr>
<tr>
<td>Trade Apprentice</td>
<td>3</td>
</tr>
<tr>
<td>Trade - other</td>
<td>3</td>
</tr>
<tr>
<td>Site Manager</td>
<td>3</td>
</tr>
<tr>
<td>Not Specified</td>
<td>3</td>
</tr>
<tr>
<td>Concreter</td>
<td>2</td>
</tr>
<tr>
<td>Steel Fixer</td>
<td>2</td>
</tr>
<tr>
<td>Project Manager</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>107</td>
</tr>
</tbody>
</table>

Table 3. Participants by job categories

3.2 Safer Work Practices

A range of different activities were raised that “people can do on-site to make it a safer place to work”. See Table 4 for the frequency of comments.

<table>
<thead>
<tr>
<th>Theme</th>
<th>Frequency of Occurrence</th>
</tr>
</thead>
<tbody>
<tr>
<td>OHS Training &amp; Education</td>
<td>65</td>
</tr>
<tr>
<td>Enforce and Inspect</td>
<td>26</td>
</tr>
<tr>
<td>Communicate</td>
<td>23</td>
</tr>
<tr>
<td>Industry Experience</td>
<td>16</td>
</tr>
<tr>
<td>Personal Accountability</td>
<td>12</td>
</tr>
<tr>
<td>Use Common Sense</td>
<td>11</td>
</tr>
<tr>
<td>Understanding of Purpose</td>
<td>8</td>
</tr>
<tr>
<td>Have General Awareness</td>
<td>7</td>
</tr>
<tr>
<td>First Aid Qualification</td>
<td>6</td>
</tr>
<tr>
<td>Adhere to Rules and Regulations</td>
<td>5</td>
</tr>
<tr>
<td>Slow down/ Realistic Timeframes</td>
<td>4</td>
</tr>
<tr>
<td>Undertake Risk Assessment</td>
<td>4</td>
</tr>
<tr>
<td>Union Involvement</td>
<td>2</td>
</tr>
</tbody>
</table>

Table 4. The Frequency of Theme Occurrence for the Activities that make a Workplace Safer.

3.3 Safety Critical Roles

A range of different roles / key positions were listed as being the three most influential roles in determining how safe the workplace is. (See Table 5 for the frequency of each role.)
### Table 5. The Frequency in which Key Positions were listed as being Within the Top Three Most Influential Roles in Determining Site Safety.

#### 3.4 Key Skills, Knowledge and Behaviour

Given the large volume of data this question generated, this paper presents the broad overall characteristics required for the identified safety critical position holders (see Table 6), as well as the specific themes for the top four tasks (OHS Advisor, Foreman/Supervisor, Shop Stewards and Workers) – see Table 7, 8, 9, & 10.

<table>
<thead>
<tr>
<th>Theme</th>
<th>Frequency of Occurrence</th>
</tr>
</thead>
<tbody>
<tr>
<td>OHS Training &amp; Education</td>
<td>65</td>
</tr>
<tr>
<td>Enforce and Inspect</td>
<td>26</td>
</tr>
<tr>
<td>Communicate</td>
<td>23</td>
</tr>
<tr>
<td>Industry Experience</td>
<td>16</td>
</tr>
<tr>
<td>Personal Accountability</td>
<td>12</td>
</tr>
<tr>
<td>Use Common Sense</td>
<td>11</td>
</tr>
<tr>
<td>Understanding of Purpose</td>
<td>8</td>
</tr>
<tr>
<td>Have General Awareness</td>
<td>7</td>
</tr>
<tr>
<td>First Aid Qualification</td>
<td>6</td>
</tr>
<tr>
<td>Adhere to Rules and Regulations</td>
<td>5</td>
</tr>
<tr>
<td>Slow down/ Realistic Timeframes</td>
<td>4</td>
</tr>
<tr>
<td>Undertake Risk Assessment</td>
<td>4</td>
</tr>
<tr>
<td>Union Involvement</td>
<td>2</td>
</tr>
<tr>
<td>Increase Budget for Safety</td>
<td>2</td>
</tr>
<tr>
<td>Collaborate</td>
<td>1</td>
</tr>
<tr>
<td>Personalise Consequences</td>
<td>1</td>
</tr>
</tbody>
</table>

Table 6. The Characteristics and Behaviour required of those who hold Safety Critical Roles.

<table>
<thead>
<tr>
<th>OHS Advisor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theme</td>
</tr>
<tr>
<td>OHS Training &amp; Education</td>
</tr>
<tr>
<td>Enforce and Inspect</td>
</tr>
<tr>
<td>Communicate</td>
</tr>
<tr>
<td>Industry Experience</td>
</tr>
</tbody>
</table>
Table 7. The Characteristics and Behaviour required of Site OHS Advisors

<table>
<thead>
<tr>
<th>Theme</th>
<th>Frequency of Occurrence</th>
</tr>
</thead>
<tbody>
<tr>
<td>OHS Training &amp; Education</td>
<td>17</td>
</tr>
<tr>
<td>Enforce and Inspect</td>
<td>9</td>
</tr>
<tr>
<td>Communicate</td>
<td>6</td>
</tr>
<tr>
<td>Industry Experience</td>
<td>4</td>
</tr>
<tr>
<td>Personal Accountability</td>
<td>2</td>
</tr>
<tr>
<td>Use Common Sense</td>
<td>1</td>
</tr>
<tr>
<td>Slow down/ Realistic Timeframes</td>
<td>1</td>
</tr>
<tr>
<td>Have General Awareness</td>
<td>1</td>
</tr>
<tr>
<td>Undertake Risk Assessment</td>
<td>1</td>
</tr>
<tr>
<td>Understanding of Purpose</td>
<td>1</td>
</tr>
</tbody>
</table>

Table 8. The Characteristics and Behaviour required of Foremen and Supervisors

<table>
<thead>
<tr>
<th>Theme</th>
<th>Frequency of Occurrence</th>
</tr>
</thead>
<tbody>
<tr>
<td>OHS Training &amp; Education</td>
<td>8</td>
</tr>
<tr>
<td>Enforce and Inspect</td>
<td>3</td>
</tr>
<tr>
<td>Use Common Sense</td>
<td>2</td>
</tr>
<tr>
<td>Union Involvement</td>
<td>2</td>
</tr>
<tr>
<td>First Aid Qualification</td>
<td>2</td>
</tr>
<tr>
<td>Communicate</td>
<td>1</td>
</tr>
<tr>
<td>Slow down/ Realistic Timeframes</td>
<td>1</td>
</tr>
</tbody>
</table>

Table 9. The Characteristics and Behaviour required of Union Representatives / Stewards

<table>
<thead>
<tr>
<th>Theme</th>
<th>Frequency of Occurrence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use Commonsense</td>
<td>5</td>
</tr>
<tr>
<td>OHS Training &amp; Education</td>
<td>3</td>
</tr>
<tr>
<td>Have General Awareness</td>
<td>3</td>
</tr>
<tr>
<td>Personal Accountability</td>
<td>3</td>
</tr>
<tr>
<td>Understanding of Purpose</td>
<td>3</td>
</tr>
<tr>
<td>Adhere to Rules and Regulations</td>
<td>2</td>
</tr>
<tr>
<td>Enforce and Inspect</td>
<td>1</td>
</tr>
<tr>
<td>Personalise Consequences</td>
<td>1</td>
</tr>
<tr>
<td>First Aid Qualification</td>
<td>1</td>
</tr>
</tbody>
</table>

Table 10. The Characteristics and Behaviour required of Site Workers

4. DISCUSSION

The purpose of this research was to identify which roles within the construction industry have the most influence in driving and maintaining a site safety culture and what behaviours these people should undertake. By identifying these roles and the required behaviours, it should be possible for companies to conduct specific, cost-efficient training that will have the maximum likelihood of reducing injury and incidents on-site.

According to the sample population of site workers, the top four influential roles are the: Site OHS Advisor / Supervisor; Foremen / Supervisor; Union Reps / Stewards; and the workers themselves.
4.1 Occupational Health & Safety Training

This theme reflected a requirement for safety critical role holders to have the appropriate safety knowledge and skills - specifically, to be able to identify and adequately manage risks and hazards. For example:

- [A Foreman should]: “Know how to identify unsafe situations. Should be competent in making all areas safe.”
- [A Foreman should have]: “Good knowledge of what is safe & what is not.”
- [A Worker should]: “Read & understand the reason behind a Safe Work Method Statement [SWMS]. How to look ahead to see a problem before it becomes a safety issue.”

Significantly, skills, knowledge and the type of training referred to in the sample and commonly in other open-ended comments relates to the pro-active identification of unsafe situations (ie, hazards), and, what is safe or not by foremen and understanding of a SWMS or a JSA (job safety analysis) and, how to look ahead to see a problem before it becomes a safety issue by workers: In other words, what is indicated resides in safety cultural and BBS practice that hazards are identified pro-actively; that according to established OHS practice the hazards and associated risks are controlled with recognised and appropriate hazard and risk tools based on training that is commensurate with the knowledge and skills sets of both the safety critical role holders and workers as well as their behaviours. The practical requirements are already embedded in JSAs and SWMSs: In our view, based on our research so far, what is all too often lacking is the necessary safety behaviours and the safety cultural expressions as well as training that elicits these vital safety behaviours and safety cultural requirements.

4.2 Enforcement & Inspection

The popularity of this theme reflects a general desire from the workforce to see more enforcement of safety and more inspections conducted by management staff and probably also a more involved role by the safety and health regulators’ inspectorate. It is interesting in this regard to note that respondents saw government inspectors as having one of the least influential roles in determining how safe the workplace is (Table 5). Further investigation of this aspect of the data will be undertaken to investigate why the government inspectorates are held in such low regard. The following comments are typical participant responses to the question of what could be done to make it safer on site:

- “Travel the site at least 3 times during the working day and contact supervisors if items not up to standard and have rectified ASAP”
- “Give people infringement notices, more warnings or written notifications. Maybe even minor fines for not following safety issues.”
- “More safety walks”

Enforcement and inspections by all levels of management (in all probability, as well as inspections by government inspectors) are seen as being vital for the communication of organisational values. By not regularly inspecting or enforcing safety itself, the company is sending the message to the site workers that safety has a low priority. Hence, those who hold a safety critical role must be trained and motivated to inspect regularly and systematically and enforce compliance with safety regulations. The key to the successful completion of this task are the underlying interpersonal skills listed below.

4.3 Communication

As the title suggests, the need to have good interpersonal communication skills was frequently listed as an important characteristic in a safety critical role holder. Communication skills can be seen as giving effective feedback (eg. enforcing safety) active listening, sharing information and avoiding the
assignment of blame and nurturing the safety culture. More effective communication skills will also maximise the likelihood that the safety message is understood. For example:

- “Individual trade supervisors need to communicate and get safety to be an important part of their tradesmen's working day.”
- [Management should]: “Listen to what the workers are saying to empower the worker to take ownership of his obligations towards workplace safety. Communication. Keep it simple.”

Empowerment of workers is a necessary requirement of building trust and co-operation. Communication training needs to be given in a practical and applied manner – giving trainees the opportunity to practice and receive feedback on their performance. It is not sufficient to just tell trainees what to do, they need have the opportunity and environment to practice and perfect these skills under qualified supervision. Additionally, training needs to be delivered in a way that convinces the trainees of the value these skills will have in accomplishing safety performance and nurturing safety culture. In other words, training in effective and meaningful communications is a vital aspect of establishing and maintaining the safety culture.

5. CONCLUSION

Developing or even changing an organisational culture is a challenging, expensive and time consuming task. By targeting specific roles (particularly the Site OHS Advisor and the Foreman / Supervisor) and identifying key skills, abilities and behaviour, construction companies can improve the efficiency of training and maximise safety performance and enhance the on-site safety culture.

6. ACKNOWLEDGEMENTS

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7. REFERENCES


