

Operational safety at point-of-sale of equipment

Marketing and training innovation

Theme: New directions for the VET sector

Abstract

The uptake of *Do It Yourself* (DIY) home renovations has rapidly increased across Australia with a subsequent increase in injury rates. Currently there is no requirement by suppliers to provide product awareness training for hobbyist/DIY consumers. There is growing concern about the impact of injury to the health and well-being of the individual and also the negative financial issues that impact on the community. This research project used mixed methods to gauge the knowledge of consumers in relation to the safe operation and their interest in undertaking training of hand held power tools. Following the survey conducted at a large hardware retail outlet in Central Queensland, a *Safe Operations* training program was conducted and its efficacy assessed. International and Australian data along with industry DIY literature supported the survey findings of poor DIY consumer awareness of risks associated with the use of power tools. The outcomes of this research provide evidence of the need to provide DIY consumers training that utilise various learning styles and communication methods at point-of-sale in order to reduce risk of injury.

Introduction

Injury from Do-It-Yourself (DIY) activity is preventable. Inclusion of injury prevention and control is a National Health Priority Area in Australia (Australian Institute of Health & Welfare, 2005). The consequences of injury impact the individual and community due to reduced or loss of contribution by the individual in all aspects of living. The development of DIY safe practice interventions has been hindered due to the paucity of incidence, cause and outcome data of DIY injury (Martin, 2005). This report presents the findings of an exploratory study conducted in 2015 of DIY customer operational safety at *point-of-sale of power tool equipment* at an Australian hardware company located in Central Queensland.

DIY refers to activities undertaken by people to build, maintain, refurbish, landscape or repair internal and external property including, but not exclusive to house, out buildings, fences, motor vehicles and recreational equipment (Martin, 2005). The key feature of the activity is that the work is unpaid and not undertaken by a professional (Driscoll et al, 2003).

The uptake of DIY home renovations has rapidly increased across Australia with a subsequent increase in injury rates (QISU, 2005). DIY injury and death data is collected internationally and domestically by Australian state authorities, notably Monash University Accident Research Centre and the Queensland Injury Surveillance Unit (QISU). However, DIY injury and death data is often underreported due to numerous factors including the DIYer not seeking medical assessment and treatment, lack of reporting of patient presentations to injury data collection organisations by general practitioners, emergency departments and hospital inpatient services. Driscoll (2003) comments that DIYers have access to ideas and *how to* information from home improvement and lifestyle television

programs and the internet. Multinational and local hardware stores now also provide a vast array of products and equipment for DIY projects. Workplace Health and Safety legislation requires registered trade workers to undertake training on risk assessment on the use of hand-held power tools and personal protective equipment prior to use. The DIYer can purchase and operate any hand-held power tools without any prior knowledge or skills in the safe operation of such tools. This paper poses the question: is this situation acceptable considering the impact of injury to the health and well-being of the individual and the negative financial issues that impact the community? This research explored DIY consumer knowledge and behaviour from a major regional city in Central Queensland to provide further insight into this issue.

Discussion of Literature Review Findings

The focus of the review was injury resulting from DIY activity. The information sourced was both quantitative and qualitative from international and Australian academic studies, industry publications and media articles related to injury surveillance and reporting systems. Also explored was data regarding frequency analysed according to gender and age of the user; injury type and causal factors, cultural, social, economic, and legislative influences, trends and impact.

Various methodologies were employed by the researchers. Social narratives and observational studies provided context and fabric to support numeric data. A strong focus on financial benefits of the growing DIY sector countered with concern about DIY injury and its societal impact including productivity. As expected newspapers provided topical information and opinion about DIY injury. All authors presented information from other studies, both international and Australian. A paucity of DIY research generally and DIY injury specific research over the past 30 years was evident.

DIY has been examined since the late 1950s, albeit initially only by researchers from the USA and UK, and later included European researchers. The discussion that follows confirms the relevance of research to the growing DIY sector.

As early as 1972 Thompson et al and later Van Duijne et al (2006) found consumers have limited knowledge of safety and poor safety behaviour, and the subsequent impact on risk of injury. It is suggested that the least understood but most dangerous area is electricity. Furthermore, consumers are more interested in comparing products, which they believe are designed for safe use by the manufacturer. Numerous studies support this finding such as Driscoll et al (2003), Mackay (2011), Martin (2005) Routley et al (1995) Thompspon et al (1972). Ashby (1999) indicated the DIYer has a false perception of equipment safety which related to danger associated with sharpness and power of the product rather than an assessment of the potential safety risk of using the product and the likelihood of risk using the product.

A more recent UK study explored the relationship across DIY culture, consumption and practice, purporting that experience and practice of doing DIY activity significantly contribute to confidence to undertake DIY project, or to abandon DIY activity (Watson & Shove 2008). In Australia increased uptake of DIY home renovation was noted by growth in annual spending on products by 7 to 8 % and 13% of time spent on house related activities since the 1990s. Brown (2012) reported that \$10 billion is spent on home renovation, and an increase of 11% in value of large alterations solely in New South

Wales. Market research conducted by IBIS World (2015) reported DIY renovations and home improvement projects contributed to the \$15bn or 3.5% annual retail growth in hardware and building supplies retailing in Australia between 2012 and 2014.

There is a wider range of power tools and an associated decrease in cost of power tools, combined with new product ranges and retailing focused at the DIYer. The relationship between tools, products, skill, and competence becomes evident over time spent doing DIY activities and projects. Retailer marketing and the popularity and influence of television DIY home improvement and renovation shows has resulted in people having unrealistic confidence in their ability without the knowledge and skills required (Watson & Shove 2008).

The DIYer's ill-informed perception of risk in using hand-held power tools is not uniquely Australian. Studies conducted in New Zealand, the Netherlands, and the UK are just three examples providing evidence of a casual attitude to safety, that is anyone can do DIY, resulting in poor safety behaviour. Most DIYers do not read product instructions prior to use. Users of hand-held power tools do not understand the risk of injury and do not think of nor understand the consequences of incorrect use (Mackay 2011, van Duijne et al, 2006, Watson & Shovel, 2008).

Interestingly, Mackay's (2011) study of New Zealand DIY culture and social influences on DIY behaviour, and other studies revealed fewer injuries in women due to their role as assistant/offsider to the male partner. Australian Bureau of Statistics, Australian Institute of Family Studies (2013) suggests, there is increase in single person households which could result in more women undertaking DIY, requiring safety information and training, of the dangers associated with sharpness and power of the product rather than an assessment of the potential safety risk of using the product and the likelihood of risk using the product. The Monash University study (1995) reported DIYers lack insight, suggesting most DIYers do not have an accurate perception of their knowledge, competence, and fitness to undertake the DIY activity. Also lacking is the correct tools and equipment including personal protective equipment required for the task.

Training in safe use of hand-held power tools is essential for the DIYer (Safety Science, 2015). Evidence based training methods incorporating on-line and hands-on activities, at point-of sale, prior to commencement of the DIY activity, and refresher updates should foster acquisition of knowledge and skill development for safe DIY behaviour and practice.

Clarke (2014) and Martin (2005) researchers who consider workplace safety regulation efficacy is questionable, and none exists in the DIY area. As the DIY consumer generally does not recognise the need for safe practice, and there is a lack of supporting legislation and regulations, there is no incentive for manufacturers and retailers to provide safe tools and equipment, and safety information and instruction.

Consistent themes and trends emerge among data collection sources and research studies. Research from the National Surveillance Unit, Flinders University and data from industry stakeholders such as the Master Builders Association, the Australian Institute of Architects, and Master Electricians

Australia show; DIY accidents continue to trend upwards. As expected, there was an overrepresentation of injuries sustained by males, with falls from ladders and roofs, and injuries from power saws and other power tools being the most frequent cause of injury was reported in New South Wales during 2009-2010 (Browne, 2012). Rather than this being the exception, injury surveillance systems in Australia and internationally, report annual increases in DIY injury frequency and causes, as well as the severity of what are preventable injuries.

In 2014 the *West Australian* newspaper reported serious DIY injuries to head, neck, face, forearm, and stomach/abdomen. The Royal Perth Hospital Trauma Registry identified fewer serious injury presentations to emergency departments and reporting to general practitioner surgeries. The data is considered an under-representation by injury surveillance organisations in Victoria, Western Australia and Queensland. Again failure to follow manufacturer safety instructions and wear personal protective equipment was considered the main human error factors (Clarke, 2014).

Australian Injury Data

A survey of Australian DIYers, undertaken by Davies (2015) indicated “17% of adults take risks, and 14% said they have injured themselves, while 25% of younger DIYers take risks with their safety” (p.1). This level of risk is unacceptable according to the late Dr Bob Such, Independent MP, for South Australia. In 2012, Hegarty of *The Advertiser* newspaper cited Dr Such stating, “At the moment it is possible to walk into a hardware store and purchase a chainsaw or a large angle grinder but the purchaser currently does not need any safety training for these dangerous tools that would require stringent safety measures on a construction site” (p.1). In the previous financial year “95 South Australian DIYers” were hospitalised due to power saw, angle grinder and chainsaw injuries (Hegarty, 2012, p.1).

Twenty years ago, Monash University Accident Research Centre examined injuries associated with DIY activities. Consultation with industry revealed that *off the job* injuries resulted in significant worker absence. Alcoa (1995, p. 21), a large aluminium smelter in Victoria, reported their company recorded “more *off the job* injury absence than *on the job*”. However, priority is given to workplace injury as workplace injury prevention and management is supported by legislative practice and standards requirements. The companies interviewed considered that an employee has a responsibility for safety in their *off-the-job* activities as off-the-job DIY injuries negatively impact worker attendance and productivity. Only large USA companies provided workplace safety training that also had an *off-the-job* focus at that time. During this time Australia implemented small scale prevention pilot projects that incorporated written safety information; there was no evidence concerning measurable improvement in DIY safe practice or injury reduction (Commonwealth Department of Human Services and Health, 1995). Meanwhile DIY activity continued to increase over the next decade (Martin, 2005).

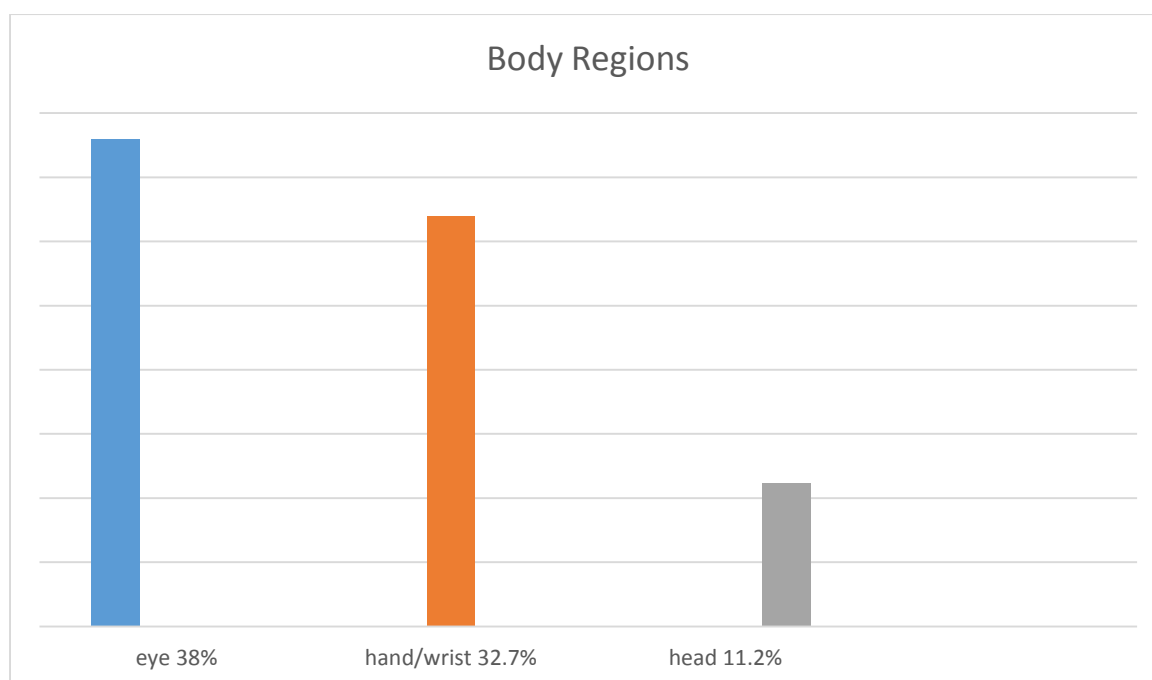
Ashby (1999) representing the Victorian Injury Surveillance and Applied Research Function Monash University Accident Research Centre reported on Victorian public hospital Emergency Department presentations and hospital admissions for DIY categories from July 1987 to June 1998, and furthermore an ABS Survey of safety hazards in the home during 1999. The data revealed that 80% of households own hand held power tools. Of those 62% have powered hand tools, and a quarter of households have an angle grinder. Males were once again overrepresented at hospital, emergency

departments DIY injury presentations. The most frequent DIY injuries were to the eye, hand and finger (Routley & Ozanne-Smith, 1995, p. 7). This was not surprising as the findings included a lack of use of personal protective equipment, unsafe work practices, use of inappropriate tools, as well as poorly designed products.

As recently as mid November 2015, the Victorian Injury Surveillance Unit (VISU), Monash University Injury Research Institute reported that in Victoria during the three financial years from 2011 to 2014, the number of Emergency Department DIY non-intentional harm injury presentations increased from 1,870 to 2,034.

The highest injury rates were in the 10 year age group bands between 35 and 54 years, totalling 41.5% of all presentations from 15 years to 85+ years.

The most frequent body regions injured were foreign body – eye (38%), wrist and hand (32.7%), and head (11.2%). When grouped the most frequent was head /face/neck (50%), followed by upper extremity (36.6%), lower extremity (9.5%) was greatest.



Title: Body Regions Injured

Data source: Victorian Injury Surveillance Unit (VISU), Monash University Injury Research Unit (2015, p. 2)

The nature of main injury:

- foreign body (40.3%)
- open wound (35.7%)
- eye injury – excluding foreign body (8.5%)

Broad cause injury groups:

- foreign body – natural orifice (38.5%)

- cutting/piercing (29.3%)
- hit/struck/crush (11.2%)
- machinery (10.6%)

Grouped activity:

- leisure (38.2%)
- other types of work – unpaid (24.4%)

Type of tool/machinery involved:

- grinder (53.8%)
- drill (13.3%)
- power saw (9.0%)
- chain saw (7.6%)
- nail gun (2.7%)

People over 55 years constitute a greater proportion of those admitted to hospital, raising questions about the severity of the sustained injury sustained, possible existence of co-morbid chronic conditions such as heart disease and diabetes which could be exacerbated by the injury, and impact of injury on medications to treat hypertension (VISU 2015). Fall: on and from ladder (46.6%) and cut/pierce: contact with other power hand tools and hand-held machinery (24.8%) were the most frequent detailed case groups. Of concern is the proportion of DIY injuries involving falls from ladders, and what proportion of falls occurred when using hand held power tools (VISU, 2015). While incidence of DIY falls in Victoria increased over time, causal and contributing factors remain unchanged since the 1990s. The Queensland data provided by the Queensland Injury and Prevention Project from the Queensland Injury Surveillance Unit (2012), for the period of 1993 to 1998 also indicated an increasing frequency of injury and no improvement in awareness or behaviour during that period or later.

Internationally and domestically, data sources reveal that DIY injury continued to increase since the 1990s. Queensland Injury Surveillance Unit (QISU) (2012) stated overstretched Hospital Emergency Departments was considered the major factor for injury underreporting. The causes of underreporting of less severe injuries were also considered to be due to less severe injuries presenting to a General Practitioner but not reported due to workload. All data sources indicated and that the contributing factors and nature is unchanged.

In summary:

- Males are overrepresented - >80%
- 35 to 54 year olds contribute to >40% of all ED DIY injury presentations
- Head /face/neck, fingers/hand (upper extremity) >75% body regions injured
- 40% of injuries were caused by a foreign body, 30% by cutting and piercing
- Approximately half of injury admissions to hospital requiring treatment resulted from falls from ladders and a quarter from cuts and/or pierces from contact with hand held power tools and equipment
- Hospital admission rates increased proportionately with age

- More than 50% of injuries resulted from using a grinder, other most common tools were saws, drills, sanders, and welders
- The most common injuries were foreign body - eye (grinder), cuts and lacerations – fingers (saw), penetrating wounds – finger/hand (drill), flash burn /foreign body – eye (welder), bone fracture – extremities (ladder)
- More than half of DIY injury presentations to ED occur on weekends (Martin, 2005, p. 13)

Workplace Health and Safety legislation requires all workers to undertake training in the correct use and safe operation of hand held power tools. All workers undertake training on hazard identification and risk assessment prior to operating hand-held power tools. The operators are trained in the correct selection and use of personal protective equipment prior to use at their workplaces. In contrast the DIYer can purchase any hand-held power tool and operate such equipment without having any knowledge or skill in safe operation of the power tool.

Manufacturers of tools and equipment and retailers such as hardware stores and equipment hire firms have a responsibility for product safety and safety information for consumers. Often the problem lies with the consumer and their perceived level of confidence aligned with their personal unacknowledged level of ignorance. This is problematic as hardware stores and equipment hire firm staff perceive their role is retail sales and are not legally required to refer the customer to manufacturer information. There is also no legal responsibility for providing instruction and training to customers. Furthermore, sales staff do not consider they have in depth knowledge of how to operate products on offer (QISU, 1998).

Injury rates indicate that an unacceptable number of DIYers do not identify and use safe practice when using hand held power tools and equipment. Contributing factors include:

- no duty of care for DIYer to use power tools and other equipment correctly
- no requirement to wear personal protective equipment
- use of inappropriate tool and equipment for the task
- risk of injury to children and adult bystanders
- unsupervised access to potentially dangerous equipment
- lack of knowledge of electricity and dangers of use

Exploring DIY – method

DIY hardware store customer survey

A review of literature of Australia identified a lack of statistical information about DIY knowledge and understanding of safe use of hand-held power tools. In order to explore and understand this issue a survey of DIYer behaviour and opinions was conducted. A request to conduct a DIY customer survey within the hardware store was made to hardware stores in a major regional city in Central Queensland.

One large Queensland hardware company accepted the invitation to conduct the survey in their store on Saturday 24 and Sunday 25 October 2015.

The survey areas of interest were:

- Characteristics of people who purchase and operate hand-held power tools by age and gender
- DIYer access to information and training to ensure safe operation of hand-held power tools prior to use
- Type of information and training sourced
- Interest in completing a training program
- Use and understanding of power tool manufacturer information and instructions

A search of internet sources failed to identify any surveys specific to the research question. In the absence of this information the researchers developed the survey questions based on the areas of interests listed above.

During April and May 2015 survey questions were developed and subsequently trialled with 15 CQU VET trade apprentice students. The trial participants answered all ten questions on the survey tool. Each trial participant was asked about their perception of the relevance of the questions to DIY activity. Also discussed with each participant regarding the clarity of each question, terms used, and layout, and if they had any difficulty in completing the survey questionnaire. No concerns were raised.

Rationale for Questions

Question Number	Purpose of Question
1 – Gender 2 – Age group	Identify age and gender demography of participants undertaking DIY projects in Central Queensland
3 – Training sourced	To identify if purchaser previously sourced training in use of hand-held power tools. If so, was training formal or informal? This would indicate participant level of knowledge and skill
4 – Sourced further information	To identify if purchaser has sourced further information in use of hand-held power tools to determine survey participant interest in understanding how to safely operate tool
5 – Specific type of training sourced	To identify the type of information and training to determine the survey participant learning style – written / visual / hands on
6 – Intention to undertake training program	To identify participant interest in undertaking a training program on hand-held power tools, and their specific training needs
7 – Awareness of hazard identification	To identify if participant has knowledge of hazard identification. This information will inform content required for development of training programs.
8 – Use of manufacturer’s instructions	To identify if participant source of knowledge is manufacturer written instruction material. Identified learning style informs training and delivery
9 – Understanding manufacturer’s instructions	To identify if manufacturer’s instructions are used. If not, this identifies a need for alternative sources and format of information.
10 – Trade qualification	To identify existing knowledge and skills.

The Point of Sale Training Survey for Hand-Held Power Tools is located in Appendix 2

Prior to completing the questionnaire each participant completed the Participant Informed Consent Form – see Appendix 1.

In total, 46 hardware store customers self-completed the 10 question survey. However, many customers declined the invitation to complete the survey with reasons given ranging from lack of time, not relevant, to no interest in participating surveys.

For analysis of the quantitative data, responses were entered into a Microsoft Excel spread sheet. Simple descriptive statistical analysis of frequency was used. Text responses were examined for common themes.

Industry Stakeholder Survey: Point of Sale Training Survey for Hand Held Power Tools

Data analysis and findings

DIY hardware store customers

The findings of the survey were:

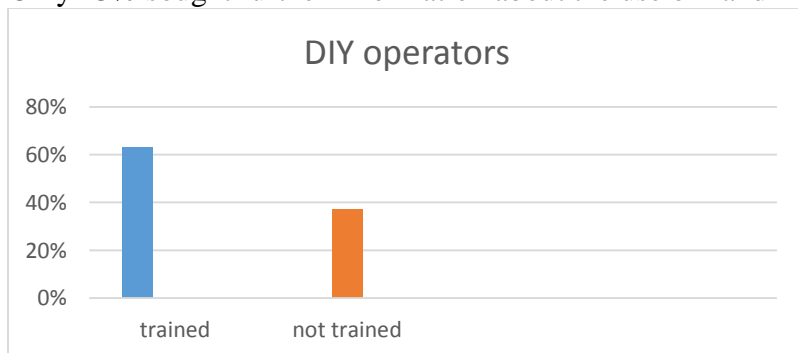
Gender: more males (72%) responded than females (28%)

While the survey sample is small, the results are indicative of previous studies. Mackay (2011) conducted a study of DIYer culture and activity reporting that couples reported the female taking the role of assistant and ‘gofer’. Similarly, female survey respondents in conversation with survey staff reported being the assistant. Moreover most females who accompanied male respondents declined the survey for the same reason “I don’t use the tools, I just off-side”.

Age: a greater proportion of 15 to 24 year olds (43%) purchased items at the hardware store during the survey period, suggesting a younger operator having limited skills and knowledge in the safe operation of hand held power tools.

34% of respondents were over 45 years old, perhaps with more life experience.

Training sourced: Of the 69% of respondents who have previously received training, 79% said they were trained on the job, 33% were formally trained, and 18% were trained by a friend. Of those who were trained on the job, the question arises as to whether the training was specific to the tool being used or was the training general of a general nature and if assessment for competence was measured. Only 13% sought further information about the use of hand-held power tools.



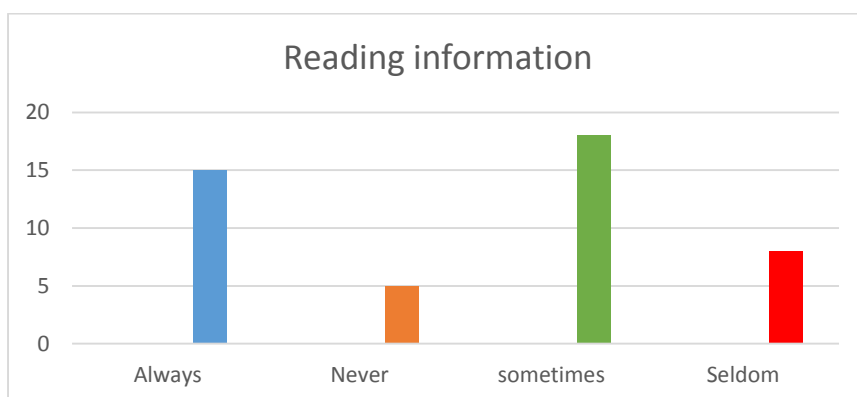
Type of training sourced: 63% of respondents said they used the manufacturer’s information, 30% accessed “you tube”, 2% television and 11% did not specify. The information gathered from this question suggested that 44% of respondents are not reading information. 33% use internet as a source of acquiring information by viewing and listening. The information booklets which the manufacturer is supplying with the hand held power tools are not meeting the requirements of the operator of the power tool and also the time required to acquire knowledge to safely operate the device. Some information on you tube and television may be readily available to the viewer, however not be accurate, and so the operator may have a false scene of his/her ability to safely operate the hand held power tool. Of note, the majority of respondents’ written responses to the question “specify the source of information”, identified the TAFE training program when completing an apprenticeship, and referred to face-to-face and hands on tuition and interaction.

Intention to undertake training program: 56.5% of responses were negative. The predominant theme of those interested in undertaking a training program was “how to use the tool correctly” and “simple common sense training”. Responses included training on a tool that the respondent was purchasing and the task to be undertaken. A training program on “the safe use of hand held power tools” was conducted and only three voucher holders participated. This result was expected as more than half of the respondents identified that they did not require training. If the operators of these hand held power tools attended training sessions they would have a better understanding of the devices they use on their DIY projects.

The list of tools is located in Appendix 3.

Awareness of hazard identification systems: While 83% of respondents said they were aware of a hazard identification system, knowledge and understanding of how to use the system is unknown. A specific question should be included in the post-training survey.

Use of manufacturer’s instructions prior to using hand-held power tools: 67% of respondents said they always read the manufacturer’s instructions. However, the remainder responded “never”, “seldom” or “sometimes”. This suggests the operation of the tool is by discovery learning, which is potentially dangerous due to the risk of injury from incorrect operation and lack of personal protective equipment.



Understanding of manufacturer’s instructions: Responses indicate that 59% of operators may not understand the instructions. This suggests improved content and presentation style to accommodate various learning styles is required.

Trade qualification: 30% of respondents said they had a trade qualification. Trades included electrical, mechanical, metal fabrication, diesel fitting, carpentry, and concreting. A Certificate III level trade qualification includes Occupational Health and Safety units of competency. Therefore only 30% of respondents can apply this knowledge and skill to the hand-held power tool operation. Therefore, 70% of respondents have had little or no formal training in the operation of hand-held tool safety awareness training. This is “discovery learning” at best (Lapointe, 2013, p. 93).



Industry stakeholder survey findings

Survey methods included observation at point-of-sale activities and conversations with twenty Rockhampton based hardware store and equipment company sales staff. The sales staff who provided information had limited knowledge of the product they were selling and left the product decision making process on which power tool to purchase to the customer. If the customer asked questions which could not be answered by the sales person, the customer was then advised to seek information on the internet or go to You Tube. One company’s representatives provided information to customers about how to seek further training by providing a training course flyer.

The findings were:

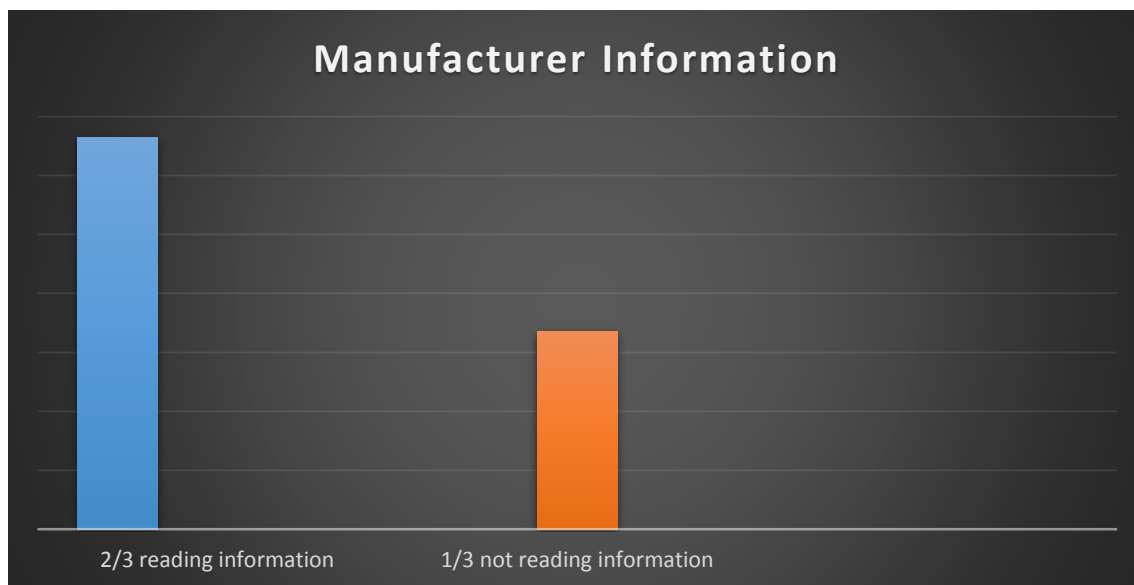
- sales staff made assumptions that the purchaser/ hirer knows how to operate the tool/ equipment

- sales staff believe their role is sales not instruction about how to operate the tool/equipment
- two companies promote training and support this by providing customer with local training course flyers

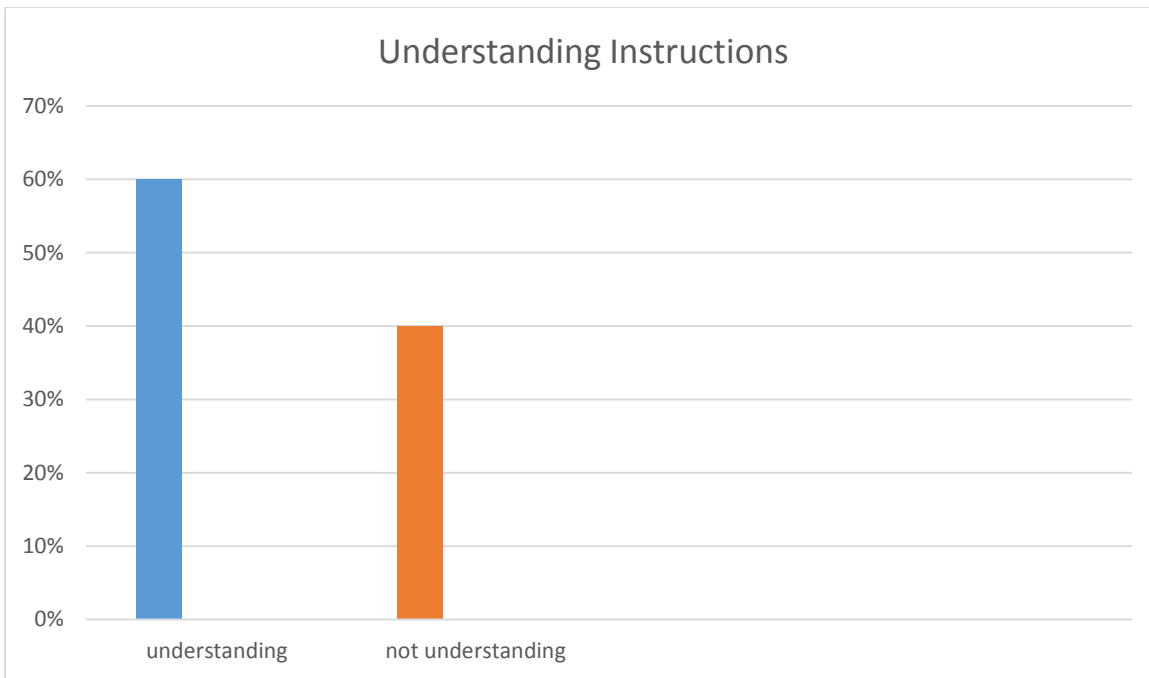
Discussion

Overall the survey findings of the Central Queensland regional hardware store DIY customers and of hardware stores and equipment companies’ sales staff reflected the findings of studies conducted within Australia and internationally. Various industry publications and media groups including IBIS World (2015) Janda (2014) Australian Magazine (2011) Courier Mail (2016) report many factors including affordability, self-perceived DIY capability, as well as home improvement and lifestyle television shows and the internet provide easy access to information has contributed to the popularity of DIY activity. Industry stakeholders indicate growth in hardware product sales including sales of hand-held power tools and equipment. Of concern is the ongoing annual increase in injuries sustained doing DIY activities.

In order to achieve legislation at State and Federal Government levels further studies involving larger sample size and a pilot training program are required to inform policy makers of the need for improvement in DIY safe practice is required to address the ongoing issue of DIY injury. It is recognised that most DIY injuries are preventable. A worker who operates hand-held power tools must undergo workplace training to do so. Why then can the DIYer purchase a chainsaw or angle grinder from a supplier without undertaking any operational or risk assessment training. The survey results below identify that only two thirds of those surveyed in Central Queensland said they read the manufacturer’s instructions.



Furthermore, more than half of the respondents indicated they did not understand the instructions. This suggests the information is unable to be comprehended by the reader, or is presented in a format that does not meet the learning needs of the reader. DIYers who are accessing information via the internet have no guarantee the information and instruction is evidenced based.



International and Australian research sources identify that generally, the DIYer lacks awareness, knowledge, and skills required to safely undertake DIY activity that involves the use of hand-held power tools. Risk assessment and hazard identification are not understood or undertaken in the planning stage or as a consequence of unforeseen risks and changes to the project plan. This contributes to the unsafe behaviours identified in Emergency Department injury presentations.

The Central Queensland survey included a greater proportion of respondents aged 15 to 24 years followed by those over 45 years of age. The younger age group did not predominantly feature in other data collections. The researcher in the Central Queensland survey observed most people in the 25 to 43 year age group declining the offer to participate due to having children with them or commitments with children.

A consistent finding of the literature is that there are fewer women injured in DIY activity. Females reported their contribution to DIY activity was usually to assist or to be an offsider for the male partner. However, this cultural feature may change with a population shift to more single households. Female respondents also expressed interest in undertaking training in use of power tools.

The survey conducted in Central Queensland identified that approximately half the DIYers were interested in undertaking training in the safe use of power tools and equipment for a specific task. Also the timing of the training needs to be as close as possible to the purchase or hire of the tool/ equipment to ensure relevance and safety.

Limitations

46 hardware store DIY customers participated in the survey. Attracting participants was problematic. Reasons for refusal to participate included limited or lack of time, needing to return to a task that was

interrupted due to need to make a hardware purchase, and caring for children. A greater response could have provided more information.

Some people did not want to complete a paper based questionnaire. Exploration of preference for verbal response to a questionnaire should be considered for surveys conducted in the future.

Accuracy of information provided could be questioned due to self-reporting. However, conversation as a method of identifying knowledge of information about safe use of hand-held power tools and participant willingness to participate in training programs is both time consuming for the researcher and the participant.

Respondents were not asked to rate their “self-perceived DIY capability”. The literature review revealed that DIY skills varied markedly from DIY novice with no knowledge or skills to the DIYer who brings expert knowledge and skill from their occupation and formal training.

Informal conversation indicated most respondents were local to the Rockhampton/ Capricorn Coast geographic area. Therefore, the behaviour and opinions regarding knowledge and understanding of safe use of hand-held power tools of DIYers from smaller regional towns and rural locations is unknown. Questions to consider are: do these customers access information and training; is it understood and applied to the DIY task; and are there differences in attitudes to training between customers of various hardware outlets. These questions are outside the scope of this research project, but suitable for future research.

Recommendations

Lack of awareness of safe operation of hand-held power tools, the importance of personal protective equipment, a lack of understanding of risk assessment and how to conduct risk assessment underpins the risk of injury. There is a need for awareness campaigns, education and training. Manufacturers of hand-held power tools and equipment hire firms should include a generic risk assessment tool for use of tools and equipment identification, and the correct use of personal protective equipment.

VET is well placed to develop, deliver and evaluate DIY safety awareness, education and training programs to the DIY consumer. In collaboration with local industry stakeholders such as hardware stores, and equipment hire firms, VET would facilitate DIY safe practice at point-of-sale. With Government support and possible introduction of legislation addressing the DIY industry, Brown reported in 2012, that \$10 billion was spent on home renovations in New South Wales. There is a duty of care owed towards the DIYer in our communities. Nobody has the right to allow the unsafe operation hand held power tools to occur anywhere, anytime. Industry in Australia has Work Health and Safety legislation which covers the safe operation of hand held power tools.

Legislation specific to the DIY sector is fundamental for change to occur. Using the political process VET is the most appropriate body to inform State and Federal governments of the need for this legislation and to assist in the development of a legislative framework in partnership with its networks across industry, injury surveillance, and health.

Conclusion

Injury from DIY activity continues to increase as evidenced in data collections of presentations to Emergency Departments and hospital admissions in Australia and internationally during the past 25 years. While most DIY injury is preventable injury rates continue to increase annually. The consequences of DIY related injury impact the individual and community due to a reduced contribution by the individual in all aspects of living and the potential years of life lost. The direct cost associated with provision of health care is funded by the taxpayer. Additionally, the direct and indirect costs associated with supporting the injured person in recovery has human, social, and productivity impacts on the community.

Despite a paucity of research in the DIY sector, there is evidence that lack of awareness of the safe operation of hand-held power tools and poor safety behaviour including appropriate personal protective equipment are the main contributing factors. There is also lack of awareness and understanding of risk assessment and how to undertake risk assessment.

The findings of the study conducted in Rockhampton this year reflect the findings of other sources of DIY research. The Rockhampton study identified DIY operators are not reading and comprehending the manufacturers information prior to operating these hand held power tools.

There is a need for awareness campaigns, education and training. Manufacturers of hand-held power tools and equipment hire firms should introduce a generic risk assessment tool for use of tools and equipment. Furthermore, Safety legislation is required for the DIY sector. VET has expertise to take a lead role in each of these areas.

In the meantime, in order to reduce DIY injury rates using prevention methods, the VET sector could contribute their expertise in both the safe use of tools and training techniques to take responsibility for developing and implementing awareness, education and training programs to the DIY consumer. In partnership with manufacturers, suppliers of hand held power tools, local industry stakeholders such as hardware stores, and equipment hire firms, VET could facilitate DIY safe practice at point-of-sale by applying **the 3Rs:**

- R**ead instructions
- R**isk assessment
- R**ight PPE

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Appendix 1



Point of Sale Training “operate hand held power tools” PARTICIPANT INFORMED CONSENT FORM

You have been invited to participate in a 5-10 minute survey as part of study titled
Point of Sale Training “operate hand held power tools”

Before we commence the survey, I ask that you read and complete this informed consent form, which allows you to withdraw from the survey at any time should you wish.

Your personal details will not be used in any way and privacy is totally guaranteed. During the survey period, all data will be stored securely at CQ University City Campus. At the conclusion of the research project all information gathered will be held at CQ University City Campus for a period of five years. At the conclusion of the five year period the research data will be shredded and disposed of.

I consent to participate in this research project and agree that:

- An Information Sheet has been provided to me and I have read it and understood it.
- I am willing to participate in the survey questionnaire on a voluntary basis.
- Any questions I had about the process have been clarified to my satisfaction by the Information Sheet and/or by a verbal explanation provided by the research team.
- I understand that I have the right to withdraw from the survey at any time and that my identity will remain confidential.
- I am providing informed consent to participate in this survey.

I agree to participate in the research project conducted by the listed CQU Staff Gary Balderson, William Blayney	
Signature:	Date:
I agree to being provided information about the research findings at the conclusion of the project.	
Name: [please print]	
Mailing Address:	
Email:	Telephone:
Signature:	Date:

Appendix 2



Question 1. What gender are you?

A/ Male

B/ Female

Question 2. Which of the following age brackets represents your age group?

A/ 18-30 years

B/ 31-40 years

C/ 41- 50 years

D/ 51-60 years

E/ 61-70 years

F/ 71- above years

Question 3. Have you ever received training on the use of hand held power tools?

A/ yes

B/ no

If yes, specify the type of training:

A/ formal "off the job" at Technical College (TAFE)

B/ trade "on the job"

C/ informal "by a friend"

Question 4.

Have you sought further information in the use of hand held power tools?

1. Always

2. Never

3. Seldom

4. Sometimes

5. Unsure

Question 5. Please, specify the type of information and or training?

A/ Manufacturer's information

B/ Videos (i.e. You Tube)

C/ Television (please specify program)

D/ other (please specify)

Question 6.

Would you consider completing a training program on hand held power tools?

A/ yes

B/no

If yes specify what type training would be required?

Question 7.

Are you aware of hazard identification systems used when using hand held power tools?

A/ yes

B/ no

Question 8. Do you read the manufacturer's instructions prior to using a hand held power tool for the first time?

1. Always
2. Never
3. Sometimes
4. Seldom
5. Unsure

Question 9. Do you understand the manufacturer's instructions prior to using a hand held power tool for the first time?

1. Always
2. Never
3. Sometimes
4. Seldom
5. Unsure

Question 10.

Do you have a trade qualification?

A/ yes

B/ no

If you answered "yes" to the above question please specify the Trade.

Appendix 3

The hand held power tools purchased at the hardware store included the following:

Angle Grinders

Circular Saws

Jigsaws

Metal saws

Sabre saws

Impact drills