World Safety Journal

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In This Edition

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and Objective

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WSO's objective is to protect people, property, resources, and the environment on local, regional, national, and international levels. WSO membership is open to all individuals and entities involved in the safety and accident prevention field, regardless of race, color, creed, ideology, religion, social status, sex, or political beliefs.

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"Making Safety a Way of Life…Worldwide."

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Article Submission

Articles for inclusion in this journal will be accepted at any time; however, there can be no guarantee that the article will appear in the following journal issue.

All articles shall be written in concise English and typed with a minimum font size of 11 point. Articles should have an abstract of not more than 200 words. Articles shall be submitted as Times New Roman print and presented in the form the writer wants published. On a separate page, the author should supply the author's name, contact details, professional qualifications, current employment position, a brief bio, and a photo of the author. This should be submitted with the article.

Writers should include all references and acknowledgments. Authors are responsible for ensuring that their works do not infringe on any copyright. Failure to do so can result in the writer being accountable for breach of copyright. The accuracy of the references is the author's responsibility.

References

Articles should be referenced according to the Publication Manual of the American Psychological Association 2017.

Books are referenced as follows:
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Articles are referenced as follows:
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There is Culture and There is Safety Culture: Lessons Learned from Construction

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Abstract

Culture provides the lens through which we see the world. Individuals and groups make assumptions about the world around them regarding priorities, norms and their role in society and the organization. The US is on the precipice of cultural change. Our multicultural nation is soon to become dominated by those who are not of Caucasian European descent. By 2050 the non-Caucasian groups will out-number Caucasians by an estimated 5%. Inclusive excellence is about respect and equity for all groups of people. Safety culture is about the assumptions and beliefs workers make about the real priorities and norms regarding safety within an organization. We have found that differences exist between Caucasians, Latinos and immigrant Latinos regarding safety behaviours, beliefs and risk perceptions. We believe that safety culture is more complex than realized due to cultural differences between peoples. Our work has investigated differences between groups within several construction populations in the US and those from Puerto Rico. We offer several recommendations to enhance inclusive excellence and safety culture in companies.

Key Words: *Construction industry. Safety culture.*

Introduction and Background

Safety culture has been a topic of increasing interest among many safety professionals in recent decades (Centre for Construction Researcher and Training (CPWR), 2013; Yu, 2018). Zohar (2010) offered a reflection on 30 years of safety culture research and the 300 publications that followed his original work from 1980 (Zohar, 1980). First and foremost, Dr. Zohar (2010) reports conceptual attributes associated with safety culture which include, "employee perceptions regarding selected characteristics or features of their organizational environment" (p. 1517). Organizational environments and characteristics are changing, the multicultural workplace is upon us and most prominently in many areas of construction. The US demographic is soon to experience a dramatic shift in proportions with the diverse populations increasing to 53%, becoming the dominate group compared to the 47% Caucasians who will then become the minority (Passel, 2008). The growing heterogeneity of the society presents challenges to organizations attempting to create positive and inclusive cultures and excellence in safety culture.

Inclusive excellence stems from the concept of social justice that can be described as participation of all groups in the decision-making process that determines the allocation of resources to meet all needs (Adams, Bell, & Griffin, 2007). Principles of community have been published that set the stage for a respectful, harmonious and multicultural workplace (Colorado State University, 2016). Inclusive excellence is simply the inclusion of all peoples regardless of their various identities, skills, ideas, talents, and contributions. Inclusion, integrity, respect, service and social justice are building blocks for the multicultural workplace that enhance the human experience for all and support the safety, health and well-being of the organization and its community (Colorado State University, 2016).

Dr. Zohar (2010) goes on to say that, "the building blocks of the organizational environment consist largely of policies, procedures and practices" within the organization (p. 1516). Safety culture is about the relationships between employee groups and the employer shaped by the policies and procedures of the organization. At the core of organizational culture are the forces that pressure individuals to act in a

manner that supports relationships to ensure group safety, comfort and productivity (Schein, 2010). Working safely is good for individuals, the group and the company overall. How do companies develop great safety culture? One way to create healthy organizations is by aligning individuals and groups to policies and procedures that support a strong commitment to inclusive excellence and safe work practices as the norm. The group norms are paramount forces that may create cohesive or divisive communications and support. The individualism is subsumed into the group collectivism (Shen, Rowlinson, 2015). What if individuals are different? What if the employee has been conditioned within a different culture, nation or locale and/or was raised with a different language, social norms and holds an atypical relationship to employers and co-workers by organizational standards? For example, some cultures don't allow women to obtain education or participate in the multi gender workplace (Martin, 2017). Saudi women were permitted to drive cars unescorted for the first time in 2018 (Hubbard, 2018). In Latino cultures, machismo dominates in the family, yet respect for authority at work is paramount and lessens the probability of challenging the boss even when engaging in unsafe behaviours (Vasquez, 2004). Immigrants come from different countries and regions and bring with them varied languages, histories, experiences, and cultural sensibilities about health-related behaviours including safety (Burnette, 2004; Menzel and Gutierrez (2010). There is evidence that personal heritage is foundational to what individual believe in and guides their behaviours (Yule, 2003). Culture makes people who they are and impacts how they will adapt or mal-adapt to the group norm.

The group attributes and norms frame social communications, expectations, boundaries, behaviours, forces and influences that shape individual choices and actions. Effective communication is key to the safe and healthy workplace. Team member exchange is a pathway to shared knowledge about safe work behaviours that strengthen the collectivism (Flynn,

Castellanos & Flores-Andrade, 2017; Shen, Tuuli, Xia, Koh, & Rowlinson, 2015). Leadership must develop effective communication methods that foster collectivism while embracing, supporting and incorporating individualism. This is key to inclusive excellence and social justice. Transformational leadership addresses individual needs while encouraging unity around the common vision, mission and project goals (Hoffmeister, Gibbons, Johnson, Cigularov & Rosecrance, 2014).

Accurate and meaningful communication is essential for sustained organizational success; this is a unique challenge in construction. The fragmented, decentralized nature of the construction workplace and subcontractor structure favours the transactional leadership style that may not address individual differences (Hoffmeister, Gibbons, Johnson, Cigularov & Rosecrance, 2014). Communication around the shared vision, mission and priorities is the hallmark of the healthy organization (Lencioni, 2016). Zohar (2010) stated that alignment between policies and procedures to practices are key to achieving a positive safety culture. Communication should be frequent and support the shared vision for safe work practices (Lencioni, 2016) and in the language of the group and individual workers to be effective (Kines, n.d.). Gilkey, Lopez del Puerto, Rosecrance & Chen (2013) found that Latinos were more likely to experience difficulty in understanding safety and health materials compared to whites. Simply translating to Spanish may not be enough to be effective; cultural nuances may play a significant factor in understanding the intent of the message as well as the content.

Safety culture is enforced by the frequency of communication about safety (Kines, Andersen, Spangenberg, Mikkelsen, Dyreborg, & Zohar, 2010). The number of times that management speak about safety is a good indicator of their commitment and priority for safety. Expanding communication to include cultural information about differences and similarities can be useful and interesting to the worker population (Flynn, Castellanos and Flores-Andrade, 2018). Communication

and expanding awareness is likely to build respect and curiosity between individuals and subgroups anchored in cultural differences. Dialogue may open the door to new understanding of groups and individuals that might not otherwise occur (Flynn, Castellanos and Flores-Andrade, 2018). Information regarding safety can then be more effectively developed to achieve the intended outcome if cultural differences are taken into consideration and addressed (Flynn, Castellanos & Flores-Andrade, 2018). Overcoming basic communication barriers such as language is only the first step. For example, Hispanic or Latino refers to people from Cuba, Mexico, Puerto Rico, Central or South America (OMB, 1997). The term Spanish refers to either Latino or Hispanic (US Census Bureau, 1977). Translating into Spanish does not address cultural differences associated with the many Spanish speaking nations.

Selective Construction Related Research

Considerable research has been focused on construction due to the high hazards, risks and adverse health outcomes. The Bureau of Labour and Statistics (BLS) reported that 4,836 workers died on the job in 2015 (BLS, 2016). Latinos are at higher risk for injury and fatality compared to their Caucasian counter parts. In 2015, 18% of all fatal falls were Latinos with 22% being foreign born. Fatalities among foreign born workers was at its highest in more than a decade (BLS, 2016). The data are clear that there is an inverse relationship of safety culture to injury, illness and fatality experience (Zohar, 2010). Leaders must take steps to develop and support positive organizational cultures (Shein, 2010) and safety culture (Zohar, 2010).

Safety culture in construction continues to be a formidable challenge. The Centre for Construction Research and Training (CPWR) and the National Institutes for Occupational Safety and Health (NIOSH) cosponsored a workshop in 2013 that focused on factors that may enhance or degrade safety culture: 1) communication, 2) accountability, 3) safety valued and aligned with production, 4) employee involvement and empowerment, 5) training and education, 6) mutual trust, 7) leadership, 8) management commitment, 9) programs, policies and practices, 10) job planning, 11) safety and health programs, systems and activities, 12) owner client involvement, and 13) general contractor, construction manager, and management of subcontractors (CPWR, 2014). Greater effort must be made to address the many factors that enhance safety culture and address cultural differences as well.

Research revealed that differences existed between Caucasians, Latinos & immigrant Latinos in key areas of safety culture regarding their perceptions about risks, management practices and priorities, site conditions, safety training, safe work behaviours and the safety of immigrants (Gilkey, Lopez del Puerto, Rosecrance & Chen, 2013; Lopez del Puerto, Clevenger, Boreman & Gilkey, 2014; Lopez del Puerto, Gilkey, Rivera & Irizarry, 2018). For example, research that investigated 341 Colorado construction workers representing all three sectors: residential, commercial and heavy civil sectors, found differences that we believe to be associated with culture (Gilkey et al., 2013). Residential construction is the least structured and most variable sector. Results revealed that residential Latino workers reported a higher level of concern about risk with a mean score of 3.9/5.0 compared to non-Latinos 3.1/5.0, p-value <0.00. Latinos also felt that productivity was a higher priority than safety, the group mean score was 3.10/5.0 compared to non-Latinos 2.6/5.0, p-value <0.00. Latino workers also reported that some safety rules are difficult to understand, mean score 3.1/5.0 to 2.6/5.0, p-value 0.01. Latinos also reported that management was more likely to place the blame on the individual for an accident, mean scores 3.2/5.0 compared to 2.7/5.0 for non-Latinos, p-value < 0.01. Latinos expressed a reduced awareness of significant hazards and the risk of death compared to non-Latinos, mean scores 2.9/5.0 compared to 2.3/5.0 for their non-Latinos counter parts, p-value < 0.01. Non-Latino workers reported a higher mean score when responding to a statement that immigrant workers make the worksite less

safe for all workers, mean score 2.4/5.0 with 55% of respondents highly agreed or agreed, p-value 0.02.

A more recent investigation compared safety culture measures from Latino construction workers from Colorado and Puerto Rico (Lopez del Puerto et al., 2018). Again, differences were found between the two populations of Latinos, one from Colorado and the other from Puerto Rico. In this case, Latinos from Colorado reported more concern about risk level compared to Latinos from Puerto Rico, mean scores 3.9/5.0 to 3.5/5.0, p-value 0.05. Colorado workers also reported that productivity was a higher priority than safety, mean scores 3.1/5.0 to 2.7/5.0, p-value 0.07. The Puerto Rican workers indicated that they would be more likely to correct a safety hazard identified on the job, mean scores 4.5/5.0 to 4.2/5.0, p-value 0.04. The workers from Puerto Rico also were more willing to warn others about working unsafely, mean scores 4.8/5.0 to 4.5/5.0, p-value 0.04. Workers from Puerto Rico felt that immigrants were more likely to suffer injuries and make the jobsite unsafe for all workers, mean scores 3.9/5.0 and 4.4/5.0 respectively, p-values < 0.01.

Results suggest that cultural differences are at play. These two studies compared groups of construction workers that were similar and different in ethnicity and location. The second study was insightful because both populations were Latino but in different locales. While Puerto Rico is a US Territory, the culture is different from the mainland and heavily Latino culture. Differences may have some alternative explanations. The work teams may be perceived as an extension of the family and support safe work behaviours that strengthen the unit well-being and collectivism. The Puerto Rico overall safety climate score was higher than the Colorado group, total scores 118 vs 115. This may also reflect the cultural commitment to family and community. Menzel & Gutierrez (2010) described the concept of "Familia" as does Schwatka, Hecker & Goldenhar (2016) and the reverence for authority. Increased risk taking by Latino workers may also be related to limited economic and political support, language differences, other barriers and conditions as well as discrimination (Roelofs, Sprague-Martinez, Burnette, & Azaroff, 2011).

Enhancing Safety Culture

Interventions and behaviours that build positive organizational culture and safety culture may include several recommendations that were discussed in the 2013 workshop (CPWR, 2014). A first step should be to understand the workforce population, know something about their demographics, identities and culture (Flynn, Castellanos & Flores-Andrade, 2018), then systematically evaluate organizational policies, procedures and operations for those factors that can enhance safety culture (CPWR, 2014). We offer some suggestions for enhancing inclusive excellence and safety culture in the workplace framed by the 2013 workshop areas with expanded concepts and details that strive to embrace cultural differences and create inclusive excellence, health, safety and well-being:

1) Communication – Create omni directional, inclusive communication that celebrates the individual and aligns to the vision, mission, and project goals. Know your audience, in scope, depth, culture and language. Create policies that engage, facilitate, support and incentivize communication. Integrate communication channels vertically and horizontally in languages that effectively reach workers. Design ease of access and use to foster communication and reporting around near misses, accidents and/or injuries, accident investigation, safety suggestions, efficiencies, productivity and quality. Protect anonymity where needed. Capitalize on modern systems for communication that include fixed and mobile technology. Build transparency with efficient and effective communication within the organization and to outside customers. Collect data, invite feedback, share and incorporate suggestions that enhance the organization's diversity and safety culture.

2) Accountability – Hold employees at all levels accountable for their contributions, compliance and participation in diversity, inclusion and safety. Integrate inclusive excellence and safety into annual

performance reviews. Develop reward mechanisms for positive behaviours and actions that build inclusive excellence and positive safety culture. Adopt the continuous model for improvement: Plan, Do, Check, Act, and verify enhancements and efficiencies in all operations that support inclusive excellence and a safe and healthy workplace.

3) Safety valued and aligned with production – Integrate multiculturalism and safety into all projects with metrics to verify actions, behaviours, effectiveness, efficiencies and quality. Establish clear roles and responsibilities for positions and encourage participation in safety, diversity, and community. Celebrate the value of safety and inclusive excellence within the organization. Reward and recognize good citizens who fulfil the vision, mission and project goals and exemplify the values of the organization. Create a culture of performance that includes diversity and safety beginning with the design phase to in-put, through-put and out-put. Use tools such as prevention through design to optimize planning for scarce resources and tight schedules. Make certain that the vision, mission and project goals are stated in an inclusive manner and address commitment to culture, safety, health and well-being.

4) Employee involvement and empowerment – Identify appropriate opportunities to invite employee input, participation and empowerment. Reward and recognize involvement in multiculturalism, safety and positive performance. Ensure employee involvement represents at all levels of the company, safety is everyone's business, facilitate ubiquitous participation. Invite feedback and participation from those closest to the risk and hazards associated with processes, conditions, tools and environments. Support multiculturalism and safety through formal positions, advances in ranks and committee service. Devise rewards and incentives that support participation, career development and convey value to the organization. Become the example for the industry, be the benchmark.

5) Training and education – Provide diversity and safety orientation and training for all employees at all levels. Commit to the training rubric: Intensity, Frequency and Duration to guarantee success. Integrate concepts of inclusive excellence and safety with the organizational vision, mission and project goals. Align members to achieve maximum efficiency, productivity and quality and verify with performance metrics. Capitalize on the many forms of training and education to develop and advance the workforce and address individual learning preferences. Design training and education learning objectives with measures of performance and competency to ensure desired outcomes and due diligence. Maximize the opportunity to create the high value workforces to achieve company vision, mission and project goals.

6) Mutual trust – Build trust within the organization between individuals, groups, units and divisions. Consider the adverse consequence that competition may have on trust between parties. Be consistent in decision making for day to day operations and work practices. Build integrity with partners within and outside the organization. Create strategies that create interdependence between units not destroy it. Trust is at the core of safety culture and inclusive excellence, walk the talk. Does management mean what they say? Do the policies embrace the concepts, details and framework for procedures to be carried out safely with inclusiveness? Does safe work procedures and inclusive excellence exist in all circumstances? What if? Does the company have integrity? Will the safe and health workplace remain the priority always, under all market conditions? Become the benchmark for positive safety culture and know that employees can assume that inclusive excellence is real, and safety is a priority at all times.

7) Leadership – Leadership is foundational to safety culture and inclusive excellence. Lead with consistency, competency and example, practice inclusive excellence and safety in all circumstances. Lead in a manner that aligns the organization to the vision, mission, values and goals. Lead with acumen regarding the political, economic, social, and technological forces that pressure the dynamic and changing landscape in construction and global business. Preserve the commitment to

social justice, inclusive excellence and safety culture. Give employees purpose, the opportunity to become excellent at what they do, and express creativity to enhance themselves, the work process, conditions, environment and company deliverables. Celebrate and embrace the individualism while supporting and growing the collectivism. Create a happy workplace and reward the positive behaviours that build inclusive excellence, community, safety, health and well-being while achieving and advancing efficiency, productivity and quality. Lead in ways that create teams, trust, support and continuous improvement with metrics that document success. Become the benchmark for leadership and transform the company in ways that secure a prosperous future.

8) Management commitment – Management commitment is core to the success of inclusive excellence and safety culture. Management commitment is demonstrated through budgets, polices, procedures, priorities, decisions, recognition and rewards in the day to day business. Management actions should align members within the organization to the stated vision, mission and goals and build a positive culture. Management choices should reflect the input of data, clear understanding of performance metrics, opinions of organizational members, and support inclusive excellence and safety culture while achieving economic success, positive branding, prosperity and sustainability.

9) Programs, policies and practices – Evaluate the existing and new programs, policies and practices for inclusive excellence and safety culture. Ask, does this program, policy or practice increase or decrease inclusive excellence or safety culture? Eliminate or transform programs, policies and practices that degrade inclusive excellence and safety culture. Grow those programs, polices, and practices that enhance inclusive excellence, safety culture, efficiencies, productivity and quality that outpace the competition. Become the benchmark for success in organizational performance in all areas by optimizing company resources, people processes and outcomes.

10) Job planning – Take advantage of job and project tools for planning that allow inclusion of safety needs, equipment and work procedures that are fully integrated into the project. Develop teams that synergize and optimize the in-puts, through-puts and achieve out-puts. Plan using SMART goals: Specific Measurable, Achievable, Relevant and Timely. Set schedules that are reasonable and adhere to principles of community, inclusive excellence and safety culture.

11) Safety and health programs, systems and activities – Adopt a model of continuous improvement: Plan, Do Check, and Act. Consider safety management systems that provide for voluntary commitment to excellence and guide the company evolution, growth and success to ensure future prosperity. Integrate principles of community and inclusive excellence into safety and health programs, systems and activities. Document performance and evolve programs that enhance inclusive excellence and safety culture to fulfil the company vision, mission, values and goals. Recognize effective strategies within health programs, systems and activities and that achieve goals.

12) Owner client involvement – The owner sets the tone for business through the vision, mission, and goals. The owner fulfils the commitment to diversity and safety culture through policies, procedures, budgets, and rewards for positive behaviours that achieve desired outcomes. Owners commit to tools and processes such as prevention through design that incorporate safety through the entire project process. Owners should seize the opportunity while serving the customer to clearly understand their needs. The owner decides what the company will do to develop products and services that meet customer needs and beyond. Owners should invite customer feedback on every aspect of company operations that serve their needs. Owners should learn from their feedback, comments and recommendations that may enhance community, safety, health, well-being, efficiencies, productivity and quality. Listen carefully and customers will tell you how to be the most competitive organization in the business.

13) General contractor, construction manager, and management of

subcontractors – The unique operational structure of the construction industry poses challenges at all levels. Parties are all too often happy to pass on the responsibility for safety to the next lower level and ultimately burden the subcontractors who perform the work and may have the least available resources. Lead by example, make an equivalent statement about the commitment to site parties that reflects the values, vision, mission and project goals around inclusion and respect for the multicultural worksite as well as safety. Work to exceed compliance along with anti-discriminatory and fair labour laws and seek participation in diversity and safety to build collectivism and a positive safety culture. Take actions that build the community and decrease disparity between cultures, groups and parties. Coordinate and integrate with partners to enhance principles of community and safety culture and thereby optimize schedules, resources and performance to achieve project goals. Work to align with project partners while maintaining the organizational vison, mission and project goals. Be the example of integrity and adhere to the values, policies and procedures of your company.

Conclusions

The presence of multicultural workplaces is on the rise. Know your audience and cultivate an atmosphere for sharing and celebrating the differences while aligning individuals, groups and parties to a common vision, mission, priorities and goals. Heterogeneity among the workforce adds richness to perspective and alternatives and may be the road to organizational survival and prosperity. Research in safety culture has expanded the concepts of how safety can be achieved. Become the benchmark and lead in diversity and safety culture by incorporating best practices and beyond.

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practices in agriculture where ATVs are used in farm and ranch operations. He is also actively involved in construction safety culture research with an emphasis on evaluating differences between Latino and Non-Latinos workers.
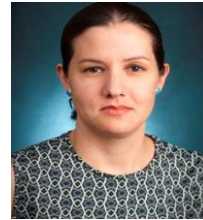
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Is Safety Good Business?

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Abstract

There is a common misconception that organisations must make a trade off between business imperatives and workplace health and safety. The purpose of this article is to identify the current cost of work health and safety failures to Australian organisations, followed by an analysis of recently published literature highlighting the significances of good business management and workplace health and safety. This article concludes with the business benefits of investing into health and safety and a case study example.

Key Words:

Safety management. Business management. Work health and safety investment.

Introduction

There is a common misconception that organisations must make a trade off between business imperatives such as profitability, production, and workplace health and safety. In Australian workplaces injury, illness and fatalities are continuously occurring costing $61.8 billion in 2012-13, equating to 4.1% GDP (Safe Work Australia, 2017). Numerous studies display evidence that aspects of existing business management, such as safety culture and leadership impact safety performance. In return, safety performance contributes to business productivity and

performance. Investment into workplace health and safety does not only reduce injury, illness and fatality rates, but can simultaneously improve aspects of business and prove as a return on investment. This article explores the relationship between business management and workplace health and safety.

Methodology

A search was conducted through the Curtin University Library Database, using keywords "business management and safety". This resulted in 2,078,185 publications, and was further refined to include data published between 1998-2018, omitting information exceeding 20 years old. This search included articles published in databases such as Science Direct and ProQuest. An additional search using the keywords "good business management and

safety" was conducted using Google, resulting in 915,000,000 results. The search was inclusive of links to Australian Government agencies such as Work Safe Western Australia, Safe Work Australia, as well as international organisations such as the Health and Safety Executive in the United Kingdom and Occupational Health and Safety Administration in United States of America. The most recent Safe Work Australia statistics were used to identify the cost of WHS failures to the Australian economy.

As a result, twenty-four publications considered for the literature review based on the depth of analysis, with case study examples, related to business management, workplace health and safety and investment in health and safety. Twelve of the publications are journal articles, 6 are professional organisation publications and 6 are government publications.

Cost of Work Health and Safety Failures to Individual, Business and Australian Economy

The provision of a safe workplace for employees, customers, contractors, volunteers, suppliers and visitors is a legal obligation for Australian employers (Australian Government, 2018). However, for a variety of reasons, work health and safety (WHS) conditions are not continuously valued and appreciated as need be (British Safety Council, 2014; Haslam et. al, 2016). This is evident in poor systems of work, inadequate and misapplied procedures, misunderstanding of legislation, lack of staff resources and inadequate work environments (British Safety Council, 2014; Haslam et. al, 2016). Understanding the possibilities of WHS failures is essential to justification of a business case for investing into better practices (Safe Work Australia, 2014).

In 2016, 182 employees died in Australian workplaces (Safe Work Australia, 2017). The serious claim frequency rate was 5.6 per million hours of work, the median time lost was 5.2 weeks and median compensation paid was $10,800 per claim in 2015-16 (Safe Work Australia, 2017). When a fatality, injury or illness occurs, not only is there direct and indirect costs for the individual and employer but also the community (Safe Work Australia, 2015). Direct costs may include employer insurance premiums and workers' compensation payments to the injured worker, indirect payments include loss of existing and future incomes, expense of social welfare programs to the injured worker, and lost productivity (Safe Work Australia, 2015). Direct costs may be well understood and measurable, however this is only a minor fraction of the total cost of workplace fatalities, illness and injury (Safe Work Australia, 2015).

In 2008-09, the total estimated cost of work related disease and injury was $60.6 billion, this figure has since increased to $61.8 billion in 2012-13 (Safe Work Australia, 2017). In 2012-13 this figure represented 4.1% of GDP and was disproportionally shared 5% by employers, 77% by workers and 18% by the community (Safe Work Australia, 2017).

By severity of work related injuries and disease, the cost was primarily partial incapacity, followed by long absence, fatality, full incapacity and lastly short absence (Safe Work Australia, 2017). Although Australia is performing well in comparison to other countries, workplace fatalities and serious injuries are continuously occurring, costing the individual, business and economy.

Business Management and Work Health and Safety

Aspects of business management, such as safety culture and leadership qualities, are the strongest indicator of safety performance (Arezes and Miquel, 2003). There are numerous studies suggesting greater WHS performance is associated where organisational leaders demonstrate strong commitment to WHS (Ernst & Young, 2016; Huang et al. 2007). Managers who present a positive and enthusiastic attitude toward WHS often have a proactive approach to workplace hazards and better health (Ernst & Young, 2016; Hale and Rundmo, 2003; Haslam et. al, 2016). Those who are responsible for managing business play a significant role in setting the

expectation of how production and WHS are implemented (Ernst & Young, 2016; Safe Work Australia, 2014). Beus, Payne, Bergman and Arthur (2010) performed a meta-analysis inclusive of more than fifty studies, and concluded management commitment to WHS is the utmost significant factor predicting occupational injuries. Research has demonstrated good business management and positive leadership can impact WHS business success.

The relationship between safety and profitability remains a contentious area of interest for managers, business owners and economists (Ernst & Young, 2016; Madsen, 2011). Many industries exist where profits can critically impact human health and safety, for example, aviation, health care and petrochemical industries (Madsen, 2011). During economic downturns, the profitability of health and safety may be questioned (Madsen, 2011). Ernst & Young (2016) report in some organisations, from individual experience, executives view going beyond legislative requirements as an unnecessary cost rather than an opportunity to improve brand reputation, attract talented staff and improve customer value. It may also be challenging for management to invest into WHS as the costs of implementation are overestimated and the costs of a WHS failure are underestimated (Amador-Rodenzo, 2005).

There is considerable research concluding it is possible to improve both business and WHS simultaneously. Michael, Evans, Jansen and Haight (2005) surveyed 641 employees and concluded that employee job satisfaction, job performance and commitment was positively associated with management commitment to WHS. Geldart, Smith, Shannon and Lohfeld (2010) discovered the execution of WHS policies, positive manager attitude toward WHS and involving workers in the decision maker process reduced lost time frequency rates. Fridlyand (2004) published a case study on a workplace that reduced their factory costs by 20%, increased employee productivity by 24% and continuously met product quality standards due to their improvement of

safety culture and safety upgrades over a five-year period. When organisational managers show commitment to WHS, employee motivation and behaviour is positively impacted (Ernst & Young, 2016; Haslam et. al, 2016; Skeepers & Mbohwa, 2015). The numerous benefits to business can range from increasing productivity and quality of goods and services to improved employee job satisfaction, wellbeing, work climate as well as company reputation and innovative capacity (Australian Government, 2018; British Safety Council, 2014; Ernst & Young, 2016; Haslam et. al, 2016; Skeepers & Mbohwa, 2015.)

Business Benefits of Investing in Work Health and Safety Interventions

There is considerable evidence showing that investment in WHS interventions may reduce injury rates, absenteeism due to sick leave and staff turnover, whilst improving productivity levels, staff morale, organisational loyalty and insurance costs (British Safety Council, 2014; Ernst & Young, 2016; ILO, 2006; United States Department of Labour, 2018). Aviva (2011) surveyed employees and found 61% of employees stated they would work harder for employers who invested in their health and safety. Aviva (2011) also discovered that employers would invest more into WHS interventions if they found a tangible return on investment (ROI). Poor WHS generates costs for not only the employee and employer, but also society and therefore it is important for organisations, regardless of size and industry to invest is WHS (British Safety Council, 2014).

Australian employees spend approximately one third of their life within a workplace and research has shown this can impact mental, physical, social and economic wellbeing (Health and Productivity Institute of Australia, 2010). Therefore, investing in workers' health and wellbeing can prove as a solid return on investment (ROI). The Health & Productivity Institute of Australia (2010) performed a large meta-evaluation and found workplace health programs decrease sick leave absenteeism by an average of 25.3%, decreased disability management costs by 24.2%, decreased

workers' compensation cost by 40.7%, and for every $1 invested the workplace would save $5.81. Their research also indicates financial performance increased by over 2.5 times in organisations that manage their workplace health well. The Health and Productivity Institute of Australia (2010) concluded the most effective WHS interventions to be changing the workplace culture and structure, incorporation of individual approaches and comprehensive workplace health interventions. However, it is essential for organisations to generate employee participation and engagement as this is necessary for ROI and WHS intervention success (Aldana, 2001; Health and Productivity Institute of Australia, 2008).

A potential limitation is determining ROI, as this can be challenging due to attribution and measurement (British Safety Council, 2014; Haslam et. al, 2016). Data is not necessarily integrated and if a ROI is not proportionate, practical and targeted a positive ROI may not be delivered (British Safety Council, 2014). It is also important to note not all benefits are financial, for example an increase in the organisations reputation to the media (British Safety Council, 2014). Currently, it is necessary for a consistent methodology to be developed on the cost of WHS interventions to improve case studies and ensure equal comparison (British Safety Council, 2014).

The Health and Safety Executive UK (2006) examined a number of case studies demonstrating the benefits to business when investing in WHS interventions. One of the case studies involved an organisation whom underwent a management buyout and the new Directors wanted to change the safety culture within the company. The specific actions included training the Director in NEBOSH, introducing new risk assessments, forming a health and safety committee, creating WHS notice boards and intranet sites as well as bimonthly company meetings and in house health and safety training. The company also introduced stress initiatives where all employees were trained in identification of stress behaviours in their colleagues and themselves, followed up with bimonthly individual meetings to provide an opportunity for discussion. The business benefits reported include; reduced absenteeism from 11.9 days per year per employee in 2002 to 5.2 days in 2005, net profit increases, considerable savings due to ability to provide in-house WHS training, improved staff retention and costs of training and recruitment and improved company image as the company has won numerous excellence awards. The Regional Director of the case study organisation, John Purnell, states:

"The benefits to our business of revolutionising our health and safety systems and placing it at the heart of what we do are very extensive. Not only do we now have higher staff morale and lower sickness, it also significantly benefits the retention of existing customers, and it is a real differentiator when winning new business and helping the company to expand."

(Health and Safety Executive, 2006, p.18) This case study is a prime example of how investing in WHS systems can simultaneously improve business and over a time period proved as a ROI.
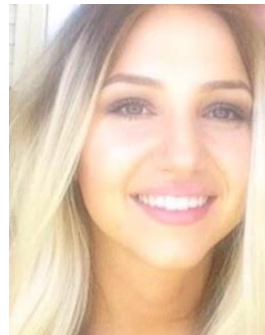
Conclusions

In numerous workplaces, business imperatives are managed as a separate process to WHS. However, WHS is not a separate process but it is the result of business imperatives. As more evidence is presented to organisations on the impact of good business management and WHS, employers and management may challenge the common misconception that WHS comes at a cost to production and profitability. Organisational leaders must be open minded to the current and emerging evidence to ensure WHS and business can positively progress and improve simultaneously.

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The Role of Human Rights and Labor Practices In Demonstrating Corporate Social Responsibility: Australian Perspectives

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Abstract

Corporate Social Responsibility (CSR) as a concept is defined in the International Standards Organization ISO26000 publication. The international context around CSR developing into national policy frameworks is explored. The focus remains on human rights and labor practices which contribute to demonstrating that Australian understanding meets these requirements, although falls slightly short in a few respects, such as the gender pay gap. Sustainability reporting is also explored to elucidate current practices and discrepancies, one of the reasons CSR is difficult to account for in an empirical/quantitative manner. Case examples from Australia are presented to demonstrate how extensive acknowledgement of CSR and implementation of beneficial initiatives can ultimately contribute to sustainable development – the main goal of implementing CSR.

Key words:

Corporate social responsibility (CSR). ISO26000. Human rights. Labor practices. Australian CSR practices

Introduction

Corporate social responsibility (CSR) is a notion defined by the International Standards Organization (2010) as the "responsibility of an organization for the impacts of its decisions and activities on society and the environment, through transparent and ethical behavior…" (p. 3) with the goal of implementation being sustainable development. The uptake of CSR by business entities around the globe has evolved over time, beginning as implicit processes initiated by organizations in an ad-hoc manner, to an integrated, proactive approach (Skouloudis, Evangelinos, Avlonitis, & Malesios, 2015) with numerous potential benefits for the enterprise implementing them (see Box 5, ISO, 2010, pp. 20-21). Further, the implications of effective adoption of CSR ripple out beyond the immediate boundaries of usual business activity, into spaces where the natural environment, wider society and regional or global economies can be impacted (Sridhar & Jones, 2013). Since its inception, the International Labour Organisation [ILO] have convened regularly to develop better guidelines which State members can use to address fundamental human rights by adopting and promoting labor practices conducive to higher levels of peace and stability. The Australian federal government has translated these into nationally adopted policies and legislative frameworks for monitoring human rights and labor practice aspects of CSR via Acts relating to equal employment opportunity, minimum conditions of employment & anti-discrimination laws. Sound management practices and responsive action to wide cultural norms and social trends among corporations have also contributed in the chain of betterment – of society, economy and environment. This paper is aimed at exploring the effect and manner in which CSR practices in Australia assist in achieving sound social responsibility for entities with business activities occurring in Australia, drawing upon cross-national and best practice examples from around the world.

Methodology

A literature review was conducted to firstly establish a contextual basis for this paper, to assist in identifying suitable themes in CSR and to locate examples of CSR practice in Australia. A preliminary search via Google's search engine with the phrase "corporate social responsibility" restricted to Australian government sites yielded 13 500 000 results. A search in the SAI Global database using "social responsibility" as the search phrase revealed 13 records of which only one was covered by license – this was ISO26000:2010. This document was read for preliminary understanding and

context around the topic of discussion. Seven core subject areas were found within the document contents including human rights and labor practices. Searching via the Curtin Library catalogue for the same key words in addition to the phrases "human rights", "labour practices" and then combined, yielded 3645, 572 & 214 results, respectively. One further search for the same initial phrase in combination with "occupational health and safety" yielded 58 results. Only peer-reviewed journal articles (and review articles) from the last 10 years were considered, with the following exceptions: one paper was sourced by separately searching for "triple bottom line approach in CSR" - included to highlight shortcomings in the field of CSR and sustainability reporting and one paper published in 2000 - included as it proposed a new conceptual model for determining organizational views with respect to CSR.

Publications (including websites) authored by committees, working groups of, or hired consultants of the United Nations (UN), International Labour Organization (ILO) and Australian Human Rights Commission (AHRC) were considered after the Curtin Library searches.

This review utilized 13 journal articles in addition to 3 from professional organizations and 4 government publications focusing on the inter-relationships between human rights acknowledgement, current labor practices and how they enable the demonstration of CSR especially in Australian business and legislative frameworks.

Corporate Social Responsibility – International perspectives and the core subjects

The seven principles of social responsibility are: accountability, transparency, ethical behavior, respect for stakeholder interests, respect for the rule of law, respect for international norms of behavior, and respect for human rights. ISO (2010) recommends that organizations observe and uphold these principles in regards to their social responsibility, in order to establish and maintain their contribution to sustainable development. Further, the six core subject areas are: human rights; labor practices;

the environment; fair operating practices; consumer issues; and community involvement and development. ISO (2010) recommends a holistic approach to addressing these core elements, as applicable to the business activities and unique contextual factors. Contextual factors considered key drivers of CSR disclosure include the size of the organization, industry, profitability and corporate governance mechanisms (Ali, Frynas, & Mahmood, 2017), so there is considerable heterogeneity in the amount, quality and content of disclosed information. Some studies in CSR indicate that there may be negative repercussions of implementing CSR initiatives by increasing barriers to international trade (Vidal-León, 2013), and the focus of CSR objectives markedly changes between developing and developed countries (Ali et al., 2017) and so CSR practices in developing countries focus on foundational economic impacts which are already present, and taken for granted in developed countries (Loosemore, Lim, Ling, & Zeng, 2018). In this way, practices in Australia are more progressive, tending to prioritize aspects like consumer protection, fair trade, green marketing and climate change (Loosemore et al., 2018).

China has been known for its readily available cheap labor sources with 'sweatshop' working conditions, a commonly exploited characteristic through which multinational companies can cut costs. This is detrimental to the CSR uptake and so in 2005, the UN held a Global Compact Summit, at which numerous governmental agencies and industrial associations worked together to devise a social compliance standard, addressing labor issues in the garment and textile sectors (Yu, 2015). Improving labor practices and overall CSR is a trans-disciplinary effort to address the complex need of people and their rights (Sridhar & Jones, 2013; Vidal-León, 2013) – it is no doubt that inter-agency, cross-national and corporate level integrated initiatives and measures are the most effective when bolstering CSR performance.

The other problem which exists is the heterogeneity or variation in CSR disclosure and reporting. Social responsibility reports have been likened to

a business card for corporations informing stakeholders of their internal efforts made to demonstrate CSR (Evangelinos et al., 2018). Varying effectiveness around which measures or indices to use as performance indicators add to the dilemma. Social responsibility goes beyond legal compliance, recognizing and meeting obligations of greater society (ISO, 2010) and a standardized way for reporting on CSR performance is eventuated by the Global Reporting Initiative (GRI). This framework brings about benefits such as an increased opportunity to identify risks and opportunities and benchmarking sustainability performance with respect to laws, norms, codes, performance standards and voluntary initiatives (Global Reporting Initiative, nd.). Sustainability reporting also serves to inform stakeholders about what corporations are doing to foster good community relations. Amoako, Lord, and Dixon (2017) gained insights into Australian CSR reporting practices by comparing the sustainability information contained on the websites of five cross-continental plants operated by Newmont Mining Corporation. Content analysis by Amoako et al. (2017) revealed by analysis of the triple bottom line categories of sustainability reporting, that, the Australian plant reported on nearly all aspects of labor practices and human rights, which was comparatively more all-encompassing than the 4 other regional headquarters within the same company. Thus, it is evident that local contextual (social, political, cultural etc.) aspects contribute significantly to the content, and amount of CSR aspects disclosed. This is likely contributable to the additional (above minimum requirements) demanded by Australia, as a developed country. Ali et al. (2017) confirm that developed countries do indeed consider more holistically the concerns and needs of the various stakeholders, e.g. the regulators, shareholders, investors, environmentalists and the media.

Classic models for examining CSR shifted to accepting that CSR is multi-dimensional: beyond just profit-making agendas (Quazi & O'Brien, 2000). This made sense as managers consider the potential positive and negative impacts of their company activities within their 'sphere of influence' – a term coined in the ISO26000 recognizing companies have the potential for contributing to societal welfare and broader economic aspects of their business activities. Also, there is a strong business case for accepting CSR as it can improve financial performance, and consequently drive corporations to want to behave at higher ethical levels (Hart, 2010). Empirical studies on managerial perceptions relating to CSR had the main finding that EH&S professionals maintain that good environmental performance, good health and safety practices & published social and environmental policies are the top 3 CSR activities which have the highest relative importance of the 15 CSR activities outlined in a questionnaire (Skouloudis et al., 2015). Therefore, the background of business professionals is an important factor in prioritization of CSR activity.

As businesses have a major contribution to social and economic standards, they can, through policies, strategy documents and codes of conduct, layout a pathway for demonstrating good corporate citizenship. By acknowledging their impacts on the communities in which they operate – especially applicable in Australia, as it has a large resources/mining industry – they can bolster a positive reputation and reconcile difficulties which may arise out of their business operations. Effectively designed policies, with robustness and revisability capabilities, can improve the gender inequality in male-dominated industries such as the construction industry (Galea, Powell, Loosemore, & Chappell, 2015). The business case for CSR practice includes questioning whether self-regulation has worked to achieve workplace equality and safety (Hart, 2010). Vogel (2005), cited in Hart (2010) that the business case for environmental responsibility is easier to make than action for labor rights or social issues – which rarely bring direct increased profits to businesses.

Human Rights
The Australian Human Rights Commission ([AHRC], 2008), points out that companies can uphold international treaties/laws relating to human rights aspects in numerous ways, one way is that companies can source ethically

responsible products/services. In Australia, this is pertinent for businesses which may source cheaper labor in developing countries. Not only do Australian companies need to operate under the stringent legislative frameworks for their local employees, but they should ensure that any migrant (or employed abroad) employees, sub-contractors or acquired labor are protected ethically and morally in ways which reflect observance of international norms of behavior. Instruments at international level include the United Nations' Universal Declaration of Human Rights (1948) which has numerous clauses pertaining to vulnerable groups and upholding the rights of people on the basis of being human. This notion transcends company reputation or internal agenda, forcing companies to address health and safety, and safeguarding their labor rights concurrently (Vidal-León, 2013). The rights of all people are grouped into two broad categories by ISO (2010): political and civil (1), and economic, social and cultural rights (2).

Hart (2010) also presents the case of women's equality interwoven in policies from the 1970s in Canada which were reflected in human rights codes at federal and provincial levels. At one point, penalization of raising a pay equity complaint was instated as part of the deregulation efforts of successive governments (1980s and beyond). This type of deregulation showed a clear move away from collective labor rights to those of the individual, which were being suppressed through penalizing unions who encouraged pay equity disputes. Workplace health and safety is promoted by unions as a matter of social justice, thus, by observing WHS/OSH matters and affording workers their human rights, social justice is facilitated and strengthened.

Rowan (2000) as cited by Lingard (2012) lists the ethical principles of managing people based on individual's rights to freedom, wellbeing and equality. In essence, sound legislative frameworks and the acceptance by organizations to contribute to OSH management, is demonstrating the businesses observance of human rights, and subsequently fulfils this element of CSR.

Labor Practices

National Employment Standards in Australia are the minimum provisions required for the employment of people in Australia as per the Fair Work Act 2009 (Commonwealth Gvt. Part 2-2, Divisions 3-12). This Act lays out the national-level framework and through its provisions ensures the legal observance, and subsequent adherence to human rights and labor practice aspects of international treaties like the Universal Declaration of Human Rights 1948 and the ILO Fundamental Rights at Work (2003).

At a State level, best practice guidance for employers has been published online by the Department of Mines, Industry Regulation and Safety [DMIRS] (2014, 2016, 2018) about three key initiatives all Western Australian workplaces can adopt. These are: flexible work options (e.g. part time work, purchasing leave and teleworking), measures for reducing the gender pay gap (e.g. workplace self-assessment, increasing equality through recruitment & training policies) and workforce planning (e.g. measuring and analyzing current skill base of employees). These types of initiatives have a positive impact on the CSR profile and are active ways for achieving the goals set forth in the ISO (2010) guidance by improving standards of living, provision of productive and meaningful work and facilitating social justice.

Australian CSR practices

The following section focuses on two different scenarios relating to how CSR can be demonstrated from a contemporary Australian viewpoint. Firstly, in a paper by Galea et al. (2015), gender inequality in two large Australian multi-national construction firms was highlighted. At present, the Workplace Gender Equality Agency (WGEA, 2018) lists the gender pay gap in Australia at 14.6%. Dainty et al. (2000) as cited by Galea et al. (2015) links poorly designed company policies and procedures, of which those having uncalculated consequences by inadvertently decreasing opportunities for women as most problematic. To counter the pay gap in broader Australia, the federal government introduced a requirement to report on the gender composition of workforce, to create a measuring tool which can then better

inform national policies. Another 'soft' instrument, known as the ASX Corporate Governance Guidelines 2010 (as cited by Galea et al., 2015) indicate disclosure and reporting of equality policies along with gender targets for all publicly listed corporations. These instrumental reporting measures can contribute to gauging the equality imbalances and should help improve acknowledgement of gender issues in an empirical and quantifiable manner. Subsequently, all corporations should implement better human resource policies and initiate cultural changes to decrease 'the gap'.

Basu, Hicks, Krivokapic-Skoko, and Sherley (2015) noted the exceptional CSR demonstrated by an Australian mining company: Newcrest. The authors noted that variations in social and economic impacts of mining activities were governed by local and industrial contexts, the contribution by different levels of government (e.g. levies imposed, inspection programs, through to royalty taxes), as well as the level of media scrutiny and community interest displayed. Further, the positives (e.g. increased household income, better housing affordability) and negatives (e.g. shrinking of other Australian industries like manufacturing) determined whether a mining company could acquire a 'social licence to operate' (SLO). By addressing community involvement and development, but also positive human rights practice by considering impacts on indigenous peoples, the local communities (promoting local economic development) and improving prospects for the workforce, Newcrest were able to create and foster positive stakeholder relationships and received the SLO.

The same authors also noted that mapping societal expectations and devising action plans to bridge the gaps between a company's (Ichthys LNG project) internal vision with the perceptions of external stakeholders can equivocate to good CSR and corporate citizenship. Initiatives like an education programme for employees and contractors, brainstorming sessions with local farmers, consultations with local landholders and tours of mine sites can positively indicate CSR.

CSR sustainability reporting is improving in Australia with 92% of ASX200 companies undertaking some reporting and over 50% reporting to best practice or detailed levels compared to 19.5% in 2008 (Loosemore et al., 2018). New business models can also improve OHS and create a corporate or brand reputation which attracts employees, increases value for shareholders and decreases environmental impacts (Moser, Jakl, Joas, & Dondi, 2014). In conjunction with the programs and perspectives employed by Newmont and more broadly the construction industry, the CSR practices in Australia are on par with international recognition of human rights and labor practices – making a positive contribution to sustainable development.

Conclusion

CSR remains an important concept which organizations should strive to understand and should also address the related issues within their 'sphere of influence'. Internationally, the UN and ILO have made important contributions in providing guiding frameworks upon which Sate members' governments can shape informed policies. Sustainability reporting is an area which is evolving along with the complex contextual situations of the reporting organizations. Accurate, detailed disclosure is demanded by many stakeholders and should be provided so that the society which the corporation owes disclosure to can undersign the demonstrated indicators of performance. Standardization of reporting will improve the accountability process. Acknowledging rights of humans by virtue of being human, is still relevant today as it was when the Universal Declaration of Human Rights was published. Labor practices contribute to the wellbeing, health and safety of people employed by organizations and in Australia, the National Employment Standards are the 'concrete' foundation upon which workplace legislation is built. Examples of competent CSR practice have been exhibited by mining companies like Newcrest and by efforts made in the construction industry. Overall, Australian CSR practices are nearing best practice and can be deemed to be meeting (and even exceeding) requirements related to human rights and labor practices. Australian businesses are therefore actively participating in sustainable

development.

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Motorcycle vs Automobile -- Safety in Print!

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Abstract:

The theory that motorcycles were invented before automobiles has its roots, the fact is automobile transport of man, a three wheeled tractor, in France happened in 1769 with steam. The first automobile carriage for people was invented in 1885 by Karl Benz. The first motorcycle coincidentally also built in 1885 by Gottlieb Daimler and Wilhelm Maybach called the Reitwagen or Riding Car. It spawned a new area of transportation. From that year on motorcycle accidents have plagued the world. Based on the number of deaths from automobiles vs the deaths from motorcycles, this paper examines the risk of riding an instrument of torture a motorcycle, instead of motoring around in a four wheeled coffin, a car. Why risk riding a motorcycle instead of driving a car? The statistics are staggering and bare reading for motorcycle mishap prevention.

Key Words:

Motorcycles. Automobiles. Safety.

Introduction

What has two wheels, is powered by an engine and speeds a person down the road? Answer, the first motorcycle was built in 1885 and it was called a Reitwagen or "Riding Car".[1] Built by Gottlieb Daimler and Wilhelm Maybach, the two wheel wooden cycle called a Reitwagen had an internal combustion engine. The Daimler-Maybach showed from drawings in 1884, portrayed it had a twist grip belt tensioner, complex steering linkage and used a belt drive. The simple high speed single-cylinder engine, patented on April 3, 1885 was called the "grandfather clock engine".[2] It had a float metered carburetor, used mushroom intake valves which were opened by the suction of the pistons intake stroke, and instead of an electrical ignition system, it used hot tube ignition, a platinum tube running into the combustion chamber heated by an external open flame. It could also run on coal gas. The "grandfather clock engine" used twin flywheels and had an aluminum crankcase. This was pretty advanced for its time. The working model had a simple handlebar and used a pinion gear drive. It was crude and was described as "the first motorcycle looks like an instrument of torture" as written by Melissa Holbrook Pierson. Having the knowledge of understanding where the motorcycle came from, now where did its arch enemy the automobile hail its presence. Automobiles or cars as we tend to say are matchboxes with people. We will begin to understand this love hate relationship in the dynamics of this paper.

Body

The word "automobile" is a classical compound derived from the Ancient Greek word autós (αὐτός), meaning "self", and the Latin word mobilis, meaning "movable". Exactly who invented the automobile is a matter of opinion. If we had to give credit to one inventor, it would probably be Karl Benz from Germany. Many suggest that he created the first true automobile in 1885/1886. For historians who think that early steam-powered road vehicles fit the bill, the answer is Nicolas-Joseph Cugnot, a French military engineer who in 1769 built a steam-powered tricycle for hauling artillery. The vehicle's single front wheel performed both steering and driving functions, and it could travel at 2.25 miles per hour with four passengers aboard for about 15 minutes. At that point Cugnot's fardier à vapeur, as it was known, would need to rest in order to recuperate enough power to move again. Although ideal for trains, early steam engines added so much weight that they proved inefficient for vehicles traveling on regular roads rather than on rails. (Cugnot's second model weighed 8,000 pounds and had a tendency to tip forward when it wasn't hauling heavy artillery behind it.) As a result, some observers argue that the first true automobile was gasoline-powered. They point to not one but two inventors: Karl Friedrich Benz and Gottlieb Daimler. The two men, who had never met previously, filed their

patents on the same day—January 29, 1886—in two different German cities. Benz's three-wheeled vehicle, which he first drove in 1885, was the first to combine an internal combustion engine with an integrated chassis, while Daimler's motorized carriage (invented with his collaborator, Wilhelm Maybach) was the world's first four-wheeled automobile and featured the first high-speed gasoline engine. Technology from the 1885s with wood and steel has changed throughout the United States as Henry Ford's A-Model, has advanced to futuristic designs with light weight bodies, chassis, aluminum motors, to sheer elegant seats and leather steering wheel covers. The automobile's bottom line, compared in mass—metal, plastic, glass, and rubber all presents a hazard to motorcycles moving or stopped.

Statistics

What is the correlation between automobiles and motorcycles when it comes to accidents? Using 2016 statistics from the National Center for Statistics and Analysis[3], there were **5,286** motorcyclists killed in motor vehicle traffic crashes—an increase of 5.1 percent from the 5,029 motorcyclists killed in 2015. Per vehicle mile traveled motorcyclist fatalities occurred 28 times more frequently than passenger car occupant fatalities in motor vehicle traffic crashes as shown in Table 1.

Table 1.
Occupant* Fatality Rates, by Vehicle Type, 2015 and 2016

Fatality Rate		Vehicle Type		
		Motorcycles	Passenger Cars	Light Trucks
2015	Per 100,000 Registered Vehicles	58.47	9.58	7.75
	Per 100 Million Vehicle Miles Traveled	25.65	0.90	0.73
2016	Per 100,000 Registered Vehicles	60.90	9.94	7.80
	Per 100 Million Vehicle Miles Traveled	25.85	0.93	0.73

*Occupants include both riders/drivers and passengers.
Sources: Fatalities – FARS 2015 Final File, 2016 ARF; Vehicle miles traveled and registered motorcycles – FHWA

For interpretation of these statistics motorcycle riders are established as the person operating the motorcycle; the passenger is a person seated on, but not operating, the motorcycle; the motorcyclist is a general term referring to either the rider or passenger. Motorcycles are NOT bicycles, rather are grouped together as two- or three-wheeled motorcycles, off-road motorcycles, mopeds, scooters, mini bikes, and pocket bikes. The statistics were collected using the Fatality Analysis Reporting System (FARS). FARS is a census of fatal crashes in the 50 States, the District of Columbia, and Puerto Rico (Puerto Rico is not included in U.S. totals). Two-wheeled motorcycles accounted for 93 percent of all motorcycles in fatal crashes. If you only look at motorcycle fatalities, the numbers seem small yet staggering. Automobiles for the same period according to the U.S. Department of Transportation's National Highway Traffic Safety Administration today released fatal traffic crash data for calendar year 2016. According to NHTSA data, which was collected from all 50 states and the District of Columbia, **37,461** lives were lost on U.S. roads in 2016, an increase of 5.6 percent from calendar year 2015. The number of vehicle miles traveled on U.S. roads in 2016 increased by 2.2 percent, and resulted in a fatality rate of 1.18 deaths per 100 million Vehicle Miles Travelled – a 2.6-percent increase from the previous year. Taking the automobile fatality rate 37,461 and dividing it by the motorcycle fatality rate 5,286 you have one motorcycle rider death for every seven car fatalities or a 1:7 ratio. Granted there are 8,769,380 cars registered to 263,081 motorcycles in 2016 making cars, trucks, vans, and buses the majority on the road. Motorcycle fatalities account for 3 percent of the accidents of registered vehicles in the United States (Table 2).

Table 2
Occupant* Fatality Rates, by Vehicle Type, 2015 and 2016

Fatality Rate		Vehicle Type		
		Motorcycles	Passenger Cars	Light Trucks
2015	Per 100,000 Registered Vehicles	58.47	9.58	7.75
	Per 100 Million Vehicle Miles Traveled	25.65	0.90	0.73
2016	Per 100,000 Registered Vehicles	60.90	9.94	7.80
	Per 100 Million Vehicle Miles Traveled	25.85	0.93	0.73

*Occupants include both riders/drivers and passengers.
Sources: Fatalities – FARS 2015 Final File, 2016 ARF; Vehicle miles traveled and registered motorcycles – FHWA

Automobile fatalities appear to happen at all times of the day or night, however the peak fatalities 73 percent occur most at morning rush hour 7:00 to 8:30 a.m. at lunch time11:00 a.m. to 12:30 p.m. at the end of work day 4:30 to 6:30 p.m. and between 9:30 p.m. to 1:00 a.m.

Motorcycles very slightly in that 55 percent of the total fatalities occur weekdays and 45 percent on weekends (NHTSA, 2007, 2016)

Figure 1 Four Wheels or more

Figure 2 NO more than Three Wheels

Data shows that in 2016 the most harmful event for 2,793(55%) of the 5,421 motorcycles involved in fatal crashes were collisions with motor vehicles in transport. Of the 5,286 motorcyclists killed in traffic crashes, 94 percent (4,950) were riders and 6 percent (336) were passengers (NHSA, 2016).

Mishap Causes
The **number one cause** of a motorcycle mishap is **operator error** which includes environment, speeding, age, and alcohol. The best a motorcycle rider can hope for is to lose control and land in a pond at a slow speed, if that is not possible then all else can be painful. In single vehicle accidents about 2/3 of the accidents are caused by rider error, typically a slide out and fall due to over breaking or running wide on a curve due to excess speed or under-cornering (NHSA, 2017). Where do most fatalities occur, well 57 percent of the motorcycle fatalities occurred in urban areas, compared to 43 percent in rural areas. Most motorcycle accidents occur during a short trip associated with shopping, errands, friends, entertainment,

or recreation, and usually occurs very shortly after the beginning of the trip and within **25 miles of home**. NHTSA found that automobile distracted driving and drowsy driving fatalities declined, while deaths related to other reckless behaviors – including speeding, alcohol impairment, and not wearing seat belts – continued to increase. Motorcyclist and pedestrian deaths accounted for more than a third of the year-to-year increase. The hardest hit and most dangerous numbers show 66 percent occurred at non-intersection locations, compared to 34 percent in intersections. Sunshine takes a 59 percent claim of occurring during daylight, compared to 36 percent in the dark with 4 percent during dusk and 1 percent during dawn. A whopping **97 percent** of motorcycle fatalities occurred **in cloudy/clear conditions**, compared to 2 percent in the rain, and 1 percent in other conditions. Major interstates are congested at times and sparse traffic at other times, but 91 percent of fatalities occurred on non-interstate roads, compared to 9 percent on interstates. (NHSA, 2017)

In 2016, there were 2,625 two-vehicle fatal crashes involving a motorcycle and another type of vehicle. In multiple vehicle accidents 2/3 of the accidents are caused by the other vehicle violating the motorcycles right-of-way (NHSA, 2017). In **41%** (1,081) of these crashes, the other vehicles were **turning left** while the **motorcycles were going straight, passing, or overtaking other vehicles**. Both vehicles were going straight in 594 crashes (23%). A lot of accidents are attributed to the failure of motorist to detect and recognize motorcycles in traffic is the predominating cause of motorcycle accidents (NHSA, 2017). The driver of the other vehicle involved in collisions with motorcycles, "**just did not see the motorcycle before the collision, or did not see the motorcycle until too late to avoid the collision**" (NHSA, 2017). Motorcycle riders should try to ride beside a car, truck or bus going through an intersection to use the automobile as protection. The view of the motorcycle or the other vehicle involved in the accident is limited by glare or obstructed by other vehicle. Motorcycles were more frequently involved in fatal collisions with fixed objects than other vehicle types. In 2016, 23 percent of the motorcycles

involved in fatal crashes collided with fixed objects, compared to 17 percent for passenger cars, 13 percent for light trucks, and 4 percent for large trucks. In two-vehicle crashes, 72 percent of the motorcycles involved in motor vehicle traffic crashes were impacted in the front with only 7 percent being impacted in the rear (NHSA, 2017). Motorcycle riders cannot blame it on roadway defects (pavement ridges, potholes, etc.) as they cause only about 2 percent of all motorcycle accidents. Encounters with animals account for only about 1 percent of motorcycle accidents. Fuel system leaks and spills were present in 62 percent of motorcycle accidents in the post-crash phase, presenting an unusually high risk of fire not present in other types of motor vehicle accidents. From 2007 to 2016, motorcyclist fatalities increased by 2 percent. The **40-and-older age** group made up 49 percent of motorcyclists killed in 2007, as compared to **54 percent** of the motorcyclists **killed in 2016**. Over the 10-year period from 2007 to 2016, fatalities among the **40-and-older age group increased by 12 percent** (from 2,545 to 2,841) (NHSA, 2017). In 2007, the average age of motorcycle riders killed in motor vehicle traffic crashes was 39, whereas in 2016 the average age was 43 (NHSA, 2017).

Weekday is defined as 6 a.m. Monday to 5:59 p.m. Friday, and weekend is defined as 6 p.m. Friday to 5:59 a.m. Monday. Table 3 shows that in 2007 and 2016, roughly **half of the motorcyclists were killed** in traffic crashes **during the weekend versus weekday** (NHSA, 2017).

Based on the difference in the number of hours between weekday and weekend, there were more than 1.6 times as many motorcyclist fatalities in traffic crashes in 2016 during the weekend (19.1) versus weekday (11.9), which is similar to 2007 (19.7 versus 11.1). Among the different age groups in 2007, the 30-and-younger motorcyclists were found to have the highest rate of motorcyclists killed in traffic crashes during the weekend (5.8) versus weekday (3.5). In 2016, the 50-and-older age group had the highest rate during the weekend (6.9) versus weekday (4.4) (NHSA, 2017).

Craftsmen, laborers and students represent most of the accident-involved motorcycle riders. Professionals, sales workers, and craftsmen compromise the least involved in motorcycle rider accidents. Most riders are intelligent, competent and mostly mechanical thinkers, but the desire to ride overrides the use of common sense in many cases. Motorcycle riders involved in accidents are essentially without training; 92 percent were self-taught or learned from family or friends (MSF, 2018).

Mishap Prevention
Motorcycle **rider training** experience **reduces accident involvement** and is related to reducing injuries in the event of accidents. More than **1/2 of the accident-involved motorcycle riders** had **less than 5 months experience** on the accident motorcycle, although the total street riding experience was almost 3 years. Motorcycle riders with dirt bike experience are significantly more adept at handling a motorcycle in more accident prone situations. The typical motorcycle accident allows the motorcyclist just less than 2 seconds to complete all collision avoidance action. Speeding reduces the amount of reaction time needed to avoid or lessen the impact in an accident. Approximately 50% of motorcycle riders use safety helmets. Only 40% of accident-involved motorcycle riders were wearing helmets at the time of the accident. About 73% of the accident-involved motorcycle riders used no eye protection, and it is likely that the wind on the unprotected eyes contributed in impairment of vision which delayed hazard detection and slowed reaction time by the operator (MSF, 2018).

Helmet
Voluntary safety helmet use by accident-involved motorcycle riders was lowest for untrained, uneducated, young motorcycle riders on hot days and short trips. . The **most deadly injuries** to the accident victims were injuries **to the chest and head**. Safety helmet use did not block or impair critical traffic sounds, no limitation of pre-crash visual field, and no fatigue or loss of attention. No element of accident causes or contributors was related to helmet use Helmeted riders had fewer neck injuries than un-helmeted riders. The increased coverage of the full facial coverage helmet increases protection, and significantly reduces face, neck and head injuries; however, just the use of the

safety helmet is the single most critical factor in the prevention of reduction of head injuries in most motorcycle accidents (MSF, 2018).
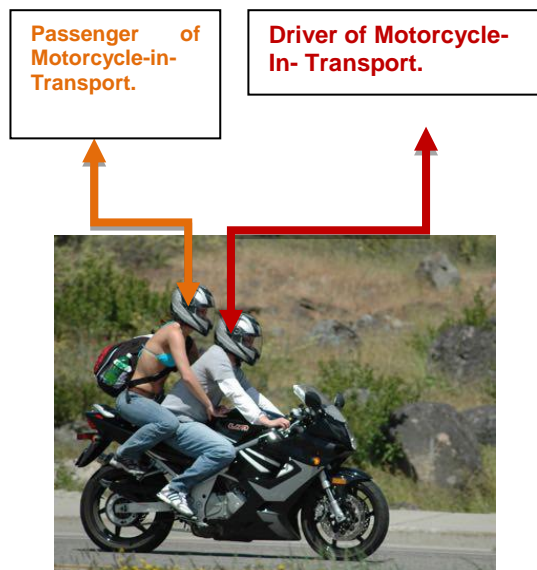

Figure 4 Helmets on Two Wheels

Alcohol

Two different research institutes found that a select age group of motorcycle riders admitted to the hospital over a one year period generally had a lower BAC than car drivers of the same age group admitted during the same time period: a mean of .12% for motorcyclists compared to .18% for car drivers. Also, a smaller proportion of the motorcycle group had a BAC higher than .15%. From this evidence, they inferred that the skills involved in riding a motorcycle may be more vulnerable to the effects of alcohol, so that drinking riders' crash at lower alcohol levels. However, this inference may overlook the fact that motorcyclists are more easily injured than car drivers. A drunken motorcyclist who sideswipes a parked car will probably be injured and require police and ambulance assistance and perhaps hospitalization. An equally drunk car driver who sideswipes a car is likely to be uninjured and may flee the scene to avoid detection – an option not available to most accident-involved motorcyclists. If one assumes that accident severity increases with increasing BAC, then the better protection provided by a car may explain the difference in BAC between hospitalized motorcyclists and car drivers. As rider BAC increased, especially above 50 mg/dL, collisions with roadside obstacles and the roadway itself increased markedly (to an average of 35%), with a commensurate decrease in collisions with other vehicles in traffic. Collisions with pedestrians and animals varied little as a function of rider BAC (varying from 3-7%). Collisions with parked vehicles averaged 7% for riders with a BAC above 100 mg/dL and 1% for riders below that level. **Drinking riders with a BAC as low as 20-60 mg/dL (median 43 mg/dL) were significantly more likely than non-drinkers to collide** with the roadway or some roadside object (23% vs. 8%) (Fatality Analysis Reporting System, 2016).

Mishap Prevention

Antilock Braking Systems (ABS).
Stopping a motorcycle is more complex than stopping a car. Motorcycles have separate brakes for the front and rear wheels, and braking hard can lock the wheels and cause the bike to overturn. Not braking hard enough can put the rider into harm's way. With ABS, a rider can brake fully without fear of locking up. The system automatically reduces brake pressure when a lockup is about to occur and increases it again after traction is restored. The Insurance Institute for Highway Safety (IIHS) reports that the rate of crashes is significantly lower for motorcycles equipped with optional antilock brakes than for the same models without them (MFS, 2018).

Training Courses.
The Motorcycle Safety Foundation sponsored by motorcycle manufacturers and distributors, works with the National Highway Traffic Safety Administration (NHTSA), state governments and other organizations to improve motorcycle safety through education, training and licensing. The organization also works with the states to integrate rider safety and skills in licensing tests. It promotes safety by recommending motorcycle operators wear protective gear, especially helmets, ride sober and ride within their skill limits. Riders who complete approved safety courses may be eligible for insurance discounts. The discounts are mandatory in some states (MSF, 2018).

Motorcycle Helmet Use Laws.
Less than half of all states have laws that require all motorcyclists to wear helmets, according to the Insurance Institute for Highway Safety. Some states require that only people under a specific age wear helmets.

A National Highway Traffic Safety Administration (NHTSA) study covering 10 states found that when universal helmet laws, which pertain to all riders, were repealed, helmet use rates dropped from 99 percent to 50 percent. In states where the universal law was reinstated, helmet use rates rose to above 95 percent (MSF, 2018).

Bottom line

Every ride can be enjoyable if the proper cautions are taken before riding. Dress for the occasion, wear protective clothing all the time not just on long rides. Car drivers check the oil, gas, and tires before cranking their cars, trucks etc., and motorcyclist should do the same. Follow these simple rules for a safe ride. Remember "**Ride to Live and Live to Ride**"! (MSF, 2018.)

Eighty percent of all reported motorcycle crashes result in injury or death, according to the National Highway Traffic Safety Administration (NHTSA). That makes it all the more important to do everything you can to keep you and other motorcycle riders safe. Autos almost win every time in the clash with motorcycles (MSF, 2018).

Gear up. Wear long pants and sleeves made of leather or another thick, protective material, as well as gloves, eye protection and durable boots that cover your ankles. When it gets colder, don't forget to add layers or invest in heavier gear designed for the temps (MSF, 2018).

Be seen. Wear bright colors and add reflective elements to both your clothing and bike. Use your headlight, day or night. Ride in the section of lane that makes you most visible to motorists, and if you're not sure a motorist sees you, honk (MSF, 2018).

Wear a full-face, Department of Transportation-approved helmet at all times — preferably light-colored, for maximum visibility. Without one, you're twice as likely to suffer traumatic brain injury from a crash. Replace your motorcycle helmet regularly (a general rule of thumb is every five years) or after a crash (MSF, 2018).

Be alert. Texting motorists are, unfortunately, a very real danger, so be ready for sudden lane changes and swerves. Watch for patches of sand, potholes, railroad tracks and other road hazards, as well as fellow motorcyclists (MSF, 2018).

Beware intersections. Half of all crashes occur at intersections (MSF, 2018). A motorist turning left in front of you is perhaps the most common cause, so be on high alert so you can respond appropriately (MSF, 2018).

Never drink or speed. More than 40 percent of motorcycle riders who die in single-vehicle crashes are alcohol-impaired, and speed is at play in more than a third of fatal crashes (Fatality Analysis Reporting System, 2016). Staying sober and observing the speed limit go a long way to ensuring you'll arrive safely at your destination (MSF, 2018).

Avoid bad weather. Study up on safe ways to ride in the rain, wind, or whatever type of challenge Mother Nature tends to offer in your particular locale, in case you get stuck in it. If rain is in the forecast and you have to ride, pack rain gear to stay dry and comfortable (MSF, 2018).

Get schooled. If you're a new motorcyclist, take a motorcycle safety course. It's a good idea for experienced riders to take refresher courses, too. The Motorcycle Safety Foundation (MSF) offers classes online and in person — some of which could net you an insurance discount. They even provide the Bike and Helmet for you to train on! (MSF, 2018).

A heads-up for motorists: Collisions with motorcycles are usually the non-motorcycle driver's fault. Remember, motorcyclists have the same rights as other drivers. Check your blind spot, signal your intentions and avoid distractions. Motorist – LOOK **TWICE SAVE A LIFE!** (MSF, 2018).

Figure 5. Look twice

This could be YOU or SOMEONE YOU

Love!   Decrease the risk and enjoy the ride! Protect – Train – Live.

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Mainstreaming Occupational Safety and Health into Education: An analysis of good practice.

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Abstract

Mainstreaming — or integrating — occupational safety and health (OSH) into education means to integrate one policy area – OSH – into another – education. This means that different systems – with different institutions and different thinking – have to communicate with each other and to take joint action. The main assumption is, that mainstreaming OSH into education will help boost the overall quality of education and prepares the foundation for the development of a culture of accident prevention. Ideally OSH becomes an integral part of everyday life in any educational institution. This article reports on a study analyzing examples of good practice on how to integrate OSH into education and learning processes at all levels of the education system. The results of the study were also used to identify good-practice models and trends for integrating safety and health into education.

Key Words: *Mainstreaming OSH into education. Participation. Empowerment. Sustainability. Networking. Culture of Prevention.*

Introduction

The initiative for "Mainstreaming OSH into education" was launched by the European Agency for Safety and Health at Work (EU-OSHA) in 2002. Since then the guiding principle is, "Start young, to stay safe" throughout the entire working live (Bollmann, 2004; Bollmann, Gründler, & Holder, 2018). A driving force of this development is the European Network Education and Training in Occupational Safety and Health (ENETOSH) coordinated by the Institute for Work and Health of the German Social Accident Insurance. ENETOSH offers a platform for systematic knowledge-sharing on issues concerning education and training in OSH. The network of OSH and education experts currently has more than 900 examples of good practice on how to integrate OSH into education and learning processes at different life stages in its database: www.enetosh.net ENETOSH was set up between 2005 and 2007 by 13 partners from 10 countries with the financial support of the European Commission (2005-146 253). Today, more than 90 members from 37 countries worldwide are involved in the network. The idea that safety and health are an integral part of all phases of life guides the work of ENETOSH, which is why it covers all areas of education, from pre-school to school, initial vocational education and training, higher education through to continuing vocational education and training.

In response to a request made by the International Labor Organization (ILO) in 2015 a study was conducted to systematically analyze ENETOSH's wealth of experience in order to make empirical statements on promising models and trends for integrating safety and health into education. The intention of the study was to describe the starting points for implementing good practice models into a practice of good models (Peter Paulus), to contribute to the "practical evidence" of the projects, and to identify what needs to be done to integrate safety and health into different levels of education. The results of the study were published in a report in 2018 (Bollmann et al., 2018). The report is targeted at people responsible for the development of educational programs, heads of educational establishments, teachers and trainers, and politicians in the field of OSH and education.

Methods

At the start of the study in February 2016, the ENETOSH database contained 756 good practice examples. The sample used for the study included 53 percent of the examples (N=404). Care was taken to ensure that the sample reflected the distribution of examples across the

different levels of the education system in the ENETOSH database. Complementary qualitative and quantitative methods were used for the study: Content analysis, correlation analysis, focus group, keyword analysis, narrative interviews.

Content analysis
For the content analysis a classification system was developed based on the settings approach of the World Health Organization (WHO, 1986) and its key elements: participation, empowerment, sustainability and networking. Indicators were defined for each key element with a rating scale of 1-3 to reflect the strength of each key element. The four key elements of the settings approach were supplemented with some more elements: focus on target group; evaluation; prevention approach; policy focus; level of aggregation and type of intervention; type of activity and methods. All 404 examples of good practice were assessed on the basis of the classification system and the information stored in the ENETOSH database. The examples came from 18 EU-27 countries (Austria, Denmark, Finland, France, Germany, Great Britain, Greece, Ireland, Italy, Latvia, Lithuania, Macedonia, Malta, The Netherlands, Portugal, Romania, Spain, Sweden) as well as from Canada, Singapore, Switzerland, Turkey and the United States of America. A pre-test of the classification system was conducted using a random sample from the ENETOSH database.

Correlation analysis
A correlation analysis was performed to find out if there was a relationship between the various (key) elements. The analysis was based on the mapping of examples of good practice to the four key elements of the settings approach and the additional elements.

Focus group
The examples that were scored Level 2 or Level 3 for two or more key elements provided the basis for a focus group which took place in Istanbul in May 2016. The focus group included 11 people from eight countries (Austria, Czech Republic, Egypt, Germany, Italy, Singapore, Spain and the United Kingdom). A total of 20 examples of good practice were scrutinized intensively by the focus group. The criteria for the assessment were: relevance, clarity, sustainability, diversity, collaborative approach, effective participation and

involvement, transferability, currency and legality. The experts in the focus group selected 11 examples from the available data.

Narrative interviews
Related to the 11 good-practice examples selected by the focus group a total of nine narrative interviews were conducted between April and July 2017. Interview guidelines were developed for each key element of the settings approach.

Keyword analysis
A keyword list was created which was based on the examples ranked 3 for at least one key element. The keywords were used to do a search on all 404 examples. The analysis showed which keywords were most prevalent and whether there were differences in the frequencies for each key element.

Results
The analysis was largely based on the key elements of participation, empowerment, sustainability and networking taken from the World Health Organization (WHO) settings approach. The examples of good practice were assigned to the key elements and ranked on a scale of 1-3. A quarter of all examples of good practice were ranked Level 3 for at least one of the key elements. Almost all of the examples included sustainability (97%) and nearly as many referenced empowerment (85%). More than half of the examples (64%) were related to networking and over a quarter to participation (27%). In terms of the individual levels of education, there was also a clear prevalence of the key element networking. In contrast, the element evaluation was poorly represented across all levels of the education system apart from "higher education" where it was frequently mentioned. A significant correlation was found between the key elements networking, participation and sustainability and other elements. The significant correlation between networking, participation and sustainability and other elements makes them potential 'markers' for integrating safety and health into education and training.

Based on the narrative interviews eight models of good practice could be identified:
I.   The In-Practice Model: hands-on experience with workplace safety and

health.

II. The Responsibility Model: safety and health are everyone's concern.

III. The School Development Model: using safety and health to make good schools.

IV. The Active Citizenship Model: the intergenerational dialogue.

V. The Cross-Sector Model: involve multiple stakeholders from OSH and education.

VI. Sustainable Project Management in OSH Education.

VII. The Support Network: connecting people.

VIII. The Collaboration Network: strategically build and use networks.

The basis for the good models were those examples of good practice from the sample which had the highest prevalence of each key element and those selected by the focus group for an interview. The purpose of the good models is to guide good practice. Only two of these models have been scientifically evaluated (Model III: Paulus, 2010; 2008 and Model IV: Ludescher, Waxenegger, & Simon, 2016; Paulweber, Haring, & Kreilinger, 2018; Waxenegger, 2008). This corresponds to the small proportion of evaluation found in the examples of good practice. However, scientific proof of the 'evidence' of these models says little about their ability to be put into practice. In the future, research on implementation will be needed to document the process of implementing these models and to link this with the results of an efficacy evaluation.

The keyword analysis was carried out for the entire sample and also for each key element and additional element, then compared with the frequency in the entire sample. The keyword "safety" was found in over half of all examples (57%). "School" could be found in 40 percent of examples and "student" in 30 percent. "Teacher" was mentioned in 26 percent of cases and the words "prevention", "age", "information", "accident", "environment" and "learning" were mentioned in around one fifth of examples.

Discussion

Participation

More than a quarter of examples of good practice referenced participation. The most common form of participation was "teamwork". However, "active participation in planning and decision-making processes" could only be identified in 16% of the examples in the sample. The highest value was found in "vocational education and training", the lowest value in the field of "higher education". Participation requires specific individual skills as well as the motivation to take part in measures to improve safety and health. Of central importance here is Albert Bandura's concept of self-efficacy (1997): believing in yourself and your capacity to make a difference with your own actions. In addition, participation requires knowledge about safety and health at work. Equally important is a participatory work or school environment, as well as the personal commitment of the management in a company or educational institution to self-organized learning and working. In principle, participation is voluntary and is associated with civic engagement, proactive behavior and commitment. (Martínez-Córcoles et al., 2012).

Generally spoken participation as a "mantra" is not enough to promote the integration of safety and health into education and training. Furthermore, participation does not just mean "joining in" (Klatt, 2012; Suter, 2017). Participation must be structured and organized. The learning and working conditions that allow participation in the first place must be made available. Teachers must be supported in their role as process and project facilitators. Finally, participation requires empowerment so that responsibility can be assumed (Paulus, 2018). It could be helpful to describe the various forms of participation based on real-life projects for integrating safety and health into education and use this to develop recommendations for the different levels of education.

Empowerment

Almost all examples from the sample were assigned to the key element empowerment. Which educator or trainer does not want to empower? However, evidence was only found in 10% of the examples for "self-determined, autonomous action" (Level 3). More than half of the examples from "continuing vocational education and training" (58%) still use the classic paradigm of instruction for safety and health.

In order to be able to switch "power" on, it is important to have the right

organizational conditions. The importance of "structural empowerment" (Orgambídez-Ramos & Borrego-Alés, 2014; based on Kanter, 1993) is particularly prevalent in the field of "pre-school/school". Simply being allocated a task or responsibility is often not enough. The task must also have meaning and be associated with the feeling that something can really be done (psychological empowerment) (Spreitzer, 1995; based on Thomas & Velthouse, 1990). Teachers can encourage students without overburdening them (Paulus, 2018). The experience of being competent associated with such a task is, in itself, conducive to safety and health and well-being.

It is vital to systematically use empowerment in the future for the integration of safety and health into education. This is shown by current examples such as "Empowering Leadership" for school directors (Wong & Laschinger, 2013; Hundeloh & Paulus, in preparation). An important topic, both now and in the future, is the ability to learn and teach in smart learning environments while taking into account safety and health.

Sustainability

Integrating safety and health into education is sustainable if it enables people to think and act in a sustainable way (Sustainable Development Goal 4 and particularly SDG 6 and SDG 8), when it is done across all stages of life and learning, and when it contributes to the development of a sustainable culture of prevention.

The individual "comes first" in the ENETOSH database, across all levels of the education system. The individual has to be equipped with the necessary competences to deal with the challenges resulting from the changing world of work (Bollmann, 2018; Bollmann & Boustras, in preparation). Evidence of the institutional framework necessary for this could only be found in 21% of good-practice examples in the ENETOSH database. Only 8% of the examples mentioned that safety and health are integral parts of organizational development and that they are related to the quality of education.

An emerging trend is a concerted effort between the World Action Programme "Education for Sustainable Development" (ESD) and the integration of safety and health into education (UN, 2015; UNESCO, 2017). For example, the dual function of education within the ESD program, both as its own goal (SGD 4) as well as a means to achieving the goals "Good Health and Wellbeing" (SDG 3) and "Decent Work and Economic Growth" (SDG 8). This dual function is reflected in the model of the "Good Healthy School" of Germany (Dadaczynski, Paulus, Nieskens, & Hundeloh, 2015).

The future development of standards for learning outcomes for SGD 3 and SGD 8 is therefore very important for mainstreaming OSH into education. Similarly, the current evolution of the ESD program draws attention to the need to reestablish the beginnings of a policy-oriented approach to mainstreaming OSH into education. This applies to the activities of EU-OSHA between 2002 and 2006, as well as to the activities of the International Social Security Association (ISSA) Section on Education and Training for Prevention between 2000 and 2010, which also involved developing countries.

Networking

More than half of the examples of good practice in the ENETOSH database mentioned networking across all levels of the education system. Networking often involved the exchange of information and experiences (61%); there were few examples in the database of networking for strategic purposes (7%).

Assuming that networking is a new mode of interacting and communicating (Kiefer & Holze, 2018; based on Castells, 1996), it is imperative that safety and health be integrated into the new learning and education space of the Internet. In addition, a recent ILO study on networking in safety and health has revealed that there will be a need in the future to systematically network OSH institutions and professional networks. The topic of OSH education and training was present in the programs of most of the 78 OSH institutions that were surveyed worldwide. However, the institutions have more contact with international or regional organizations such as WHO, the ILO, EU-OSHA and ENETOSH than bilateral contact or contact with other professional networks (Lehtinen, 2018).

Conclusions

The ENETOSH database is a unique resource for documenting the integration of safety and health into education and training. The study presents a detailed analysis of the data set, identifies guiding models of good practice, and finally highlights the following trends in integrating safety and health into education systems.

Three trends could be identified that are emerging for integrating safety and health into education:

(1) A political-strategic revival of mainstreaming OSH into education within the scope of the Global OSH Coalition conducted by ILO and WHO and the UNESCO Chair Global Health & Education initiative both based on the sustainable development goals.

(2) Targeted dissemination and implementation of good models for good practice such as the "Good Healthy School" in an international context, taking into account the digital learning and education space; and

(3) Systematic monitoring of the implementation of good models for integrating safety and health into education through research on implementation including the development of standards for a "Good Healthy School".

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Biography

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Matthew Holder is the Head of Campaigns at the British Safety Council (BSC). Matthew previously worked for Health and Safety Executive (HSE), Foreign Office and Defra on health, safety and environmental topics, including worker involvement, climate change and fisheries policy. Since joining the British Safety Council, Matthew has overseen research and has managed several campaigns. He has also written widely about future risk in the workplace.

The World Safety Organization (WSO)

The WSO was founded in 1975 in Manila, The Republic of the Philippines, as a result of a gathering of over 1,000 representatives of safety professionals from all continents at the First World Safety and Accident Prevention Congress. The WSO World Management Center was established in the United States of America in 1985 to be responsible for all WSO activities, the liaison with the United Nations, the co-operation with numerous Safety Councils, professional safety/environmental (and allied areas) organizations, WSO International Chapters/Offices, Member Corporations, companies, groups, societies, etc. The WSO is a not-for-profit corporation, non-sectarian, non-political movement to "Make Safety a Way of Life…Worldwide."

World Safety Organization Activities

The WSO publishes WSO Newsletters, World Safety Journal, and WSO Conference Proceedings.

The WSO provides a network program linking various areas of professional expertise needed in today's international community.

The WSO develops and accredits educational programs essential to national and international safety and establishes centers to support these programs.

The WSO presents annual awards: the James K. Williams Award, Glenn E. Hudson International Award, J. Peter Cunliffe Transportation Award, WSO Concerned Citizen, WSO Concerned Professional, WSO Concerned Company/Corporation, WSO Concerned Organization, Educational Award, WSO Chapter/National Office of the Year, and Award for Achievement in Scientific Research and Development.

The WSO provides recognition for safety publications, films, videos, and other training and media materials that meet the WSO required educational standards.

The WSO receives proposals from professional safety groups/societies for review and, if applicable, submits them to the United Nations for adoption.

The WSO establishes and supports divisions and committees to assist members in maintaining and updating their professional qualifications and expertise.

The WSO has Chapters and National/International Offices located throughout the world, providing contact with local communities, educational institutions, and industrial entities.

The WSO organizes and provides professional support for international and national groups of experts on all continents who are available to provide expertise and immediate help in times of emergencies.

Benefits of Membership

The WSO publishes the "WSO Consultants Directory" as a service to its Members and to the Professional Community. Only Certified Members may be listed.

The WSO collects data on the professional skills, expertise, and experience of its Members in the WSO Expertise Bank for a reference when a request is received for professional expertise, skill, or experience.

The WSO provides a network system to its Members whereby professional assistance may be requested by an individual, organization, state, or country or a personal basis. Members needing assistance may write to the WSO with a specific request, and the WSO, through its Membership and other professional resources, will try to link the requester with a person, organization, or other resource which may be of assistance.

The WSO provides all Members with a Membership Certificate for display on their office wall and with a WSO Membership Identification Card. The WSO awards a Certificate of Honorary Membership to the corporations, companies, and other entities paying the WSO Membership and/or WSO Certification fees for their employees.

Members have access to WSO Newsletters and other membership publications of the WSO on the WSO website, and may request hard copies by contacting the WSO World Management Center. Subscription fees apply to certain publications.

Members are entitled to reduced fees at seminars, conferences, and classes given by the WSO. This includes local, regional, and international programs. When Continuing Education Units (CEUs) are applicable, an appropriate certificate is issued.

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Membership

The World Safety Organization has members who are full time professionals, executives, directors, etc., working in the safety and accident prevention fields, including university professors, private consultants, expert witnesses, researchers, safety managers, directors of training, etc. They are employees of multi-national corporations, local industries, private enterprises, governments, and educational institutions. Membership in the World Safety Organization is open to all individuals and entities involved in the safety and accident prevention field, regardless of race, color, creed, ideology, religion, social status, sex, or political beliefs.

Membership Categories

Associate Membership: Individuals connected with safety and accident prevention in their work or individuals interested in the safety field, including students, interested citizens, etc. **Affiliate Membership**: Safety, hazard, risk, loss, and accident prevention practitioners working as full time practitioners in the safety field. Only Affiliate Members are eligible for the WSO Certification and Registration Programs. **Institutional Membership**: Organizations, corporations, agencies, and other entities directly or indirectly involved in safety activities and other related fields. **Sustaining/Corporate Member**: Individuals, companies, corporations, organizations or other entities and selected groups, interested in the international effort to "*Make Safety A Way Of Life...Worldwide*."

The WSO Membership Application is included just inside the back cover and is also available on the WSO website: http://worldsafety.org/application-for-wso-membership/ and http://worldsafety.org/quick-downloads/

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*) For your country's fee rate, please contact the World Management Centre at info@worldsafety.org.

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By submitting this application, you ore accepting that WSO will use tile information provided to perform on independent

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Please specify your area of professional expertise. This information will be entered into the WSO "Bank of Professional Skills" which serves as a pool of information when a request for a consultant/information/expertise in a specific area of the profession

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World Safety Organization
Code of Ethics

Members of the WSO,
by virtue of their acceptance of membership
into the WSO,
are bound to the following Code of Ethics
regarding their activities
associated with the WSO:

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Members must be responsible for
ethical and professional conduct in relationships
with clients, employers, associates, and the public.

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Members must be responsible for professional competence
in performance of all their professional activities.

୨∞•୧

Members must be responsible
for the protection of professional interest,
reputation, and good name of any deserving WSO member
or member of other professional organization
involved in safety or associate disciplines.

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Members must be dedicated to professional development
of new members in the safety profession
and associated disciplines.

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Members must be responsible
for their complete sincerity in professional service
to the world.

୨∞•୧

Members must be responsible for continuing improvement
and development of professional competencies
in safety and associated disciplines.

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Members must be responsible
for their professional efforts to support the WSO motto:

"Making Safety a Way of Life…Worldwide."