

# GOOD WORK DESIGN

## Strategies to Embed Human-Centred Design in Organisations

Sara Pazell

University of Queensland, Australia

Advisor: Prof. Robin Burgess-Limerick

### Abstract

The objective of the project was to investigate: *How may organisations achieve good work design? What tools, practices, activities, structures, systems, conditions, and culture are required to achieve human-centred work?* This project focused on heavy industry: mining, construction, and transportation; head- of-household types of employment contributing strongly to the gross national product and production globally. In analyzing the results, language content analysis was a useful method to map salient messages revealing values and beliefs of workers and management. While the register of language differed, there was congruency in the messages and this method allowed for the alignment to be charted. Managers rated program success highly when good work design ideas were generated from the shop floor. In turn, shop floor workers (maintainers) indicated that they had the good ideas all along but required organisational support to communicate and progress (re)design projects unencumbered. Both cohorts, managers (n = 2) and workers (n = 2), conveyed tacit knowledge about successful elements of the program, indicating maturity in the program operations. There was a shared belief that safety objectives and business values were inseparable, the program led to an empowered, tolerant, and engaged workforce, and that design should be progressed throughout a supply chain. The language content suggested high levels of cultural commitment. Practices were well embedded in safety initiatives and operational planning. Overall, the business met the three elements advised in the Conceptual Model for an Integrated Approach to Protection and Promotion of Total Health (Sorenson et al, 2016): organisational leadership and commitment; coordination among health protection, promotion, and work functions to benefit health, safety, and well-being initiatives; and supportive participative organisational policies and practices. Their “hand red zone” campaign provided an example of targeted intervention that markedly reduced injury risk. Leadership values, strong leadership support, and a culture of acceptance were highly prized by all respondents and, as such, transparency and communication of these values held significance. Transformational elements, leadership, and communication were acknowledged as paramount to program success. There was agreement that good work design rated highly as a value proposition for business. The managers stated that this value proposition had to be conveyed repeatedly, in several ways, to appeal to decision-makers and people of influence. The managers also acknowledged that more could and should be done and that they were continually learning how to improve. This commitment to continual improvement was expressed through their willingness to help supply chain partners with good work design, providing uncompensated resources to support (re)design activity (including time of skilled

change-agents, biomechanical risk determination, participative ideas-generation, and reporting). The teams were dedicated to upholding lead indicators and met their targets consistently over six years. Decisions were made to strategically tackle two perceived health risks: musculoskeletal disorder and hand injuries. The goal was set that 30 (re)design activities should occur per annum and 60% of these should reduce musculoskeletal and hand injury risks. Beyond this, business units had liberty to select the tasks most meaningful to their teams and freedom to explore design avenues and control intervention within their own budgets. Management made comparison of the program with six-sigma business improvement (e.g. Bertels, 2003). An association was made with established and familiar quality management programs that helped enmesh ergonomics in standard protocol. Further, injury prevention was of value to the business and their resource allocation reflected this commitment. The ratio of allocated good work design team members to injury management treatment providers was 20:1. Opportunities for improvement included the potential to incorporate participative ergonomics techniques in business improvement studies. Green banner communication posters could include cost analysis of productivity and efficiency gains. The business showed interest in the development of decision support systems, or any additional “whistles and bells”, that would help them convey the importance of their efforts in work (re)design. The business expressed great familiarity with, and commitment to, participative ergonomics programs. There was opportunity to extend their practice to include human-centred predictive design review of equipment, tools, and machinery to inform procurement. In so doing, they could collaborate with workforce strategy teams to best meet the emerging needs of the business. Recommendations were made to extend opportunities for innovation and task selection, including the formation of study success teams to seek learnings outside their industry and developing a method to identify “near right” opportunities when workers spontaneously modify work, or when performance varies from safety instruction or standard protocol, and where, as such, a design improvement opportunity may exist. Human Factors organises information from many bodies of knowledge – psychology, engineering, exercise physiology, sociology, anthropology, environmental science, occupational science, and design professions – to consider human motivation, drives, behaviour, habits, cognitive patterns, performance capabilities, physical fitness, preferences, task demands, cultural context, and environment in which work system design may provide for optimum human performance. This “optimum fit” assures the maximum achievable safe, healthful, effective, and productive activity. Ergonomics is grouped into three primary domains: physical, cognitive, and organisational. In our modern world, more and more of our work demands and design review require analysis of cognitive-decision making, energy requirements, and motivators. Participatory ergonomics involves practice that actively engages users as participants in design. This is a facet of human-centred design inasmuch as fulfilling a tenet to ensure users and stakeholders are involved at all stages of analysis, evaluation, design, and development of technologies for work practice. Human-centred design organises technology around users’ goals, tasks, capability, and needs; human needs are central to the design process and are considered a key part of any organisational or environmental system. These strategies help mobilise a workforce

beyond engagement. Workers become architects of their work systems, procedures, and equipment; they become co-authors of superior work design. These methods go beyond co-design and user- experience as they draw upon evidence-based findings related to human performance technology.