Emotional Intelligence for Engineers
Is Emotional Intelligence a Key Performance Indicator in the Engineering Profession?

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Emotional intelligence is a set of interrelated skills involving "the ability to perceive accurately, appraise, and express emotion; the ability to access and/or generate feelings when they facilitate thought; the ability to understand emotion and emotional knowledge; and the ability to regulate emotions to promote emotional and intellectual growth" (Mayer and Salovey, 1997, p. 10). With little empirical support, people have claimed that "… emotional intelligence may be the best predictor of success in life, redefining what it means to be smart" (TIME, 1995, Cover), and that emotional intelligence will confer "….an advantage in any domain in life, whether in romance and intimate relationships or picking up the unspoken rules that govern success in organisational politics" (Goleman, 1995, p. 36). Recent research has, however, shown that emotional intelligence is related to life satisfaction and relationship quality (Ciarrochi, Chan, and Caputi, 2000) and in the workplace, emotional intelligence has been shown to be related to the employees' job satisfaction and job performance (Wong and Law, 2002). And, in addition, if leaders and managers in an organisation have high emotional intelligence, the job satisfaction, job performance, and organisational citizenship behaviour of employees in the organisation will be enhanced.

This article on emotional intelligence at work is divided into four main sections. First, the article explores what emotional intelligence is. Secondly, the article looks at the benefits of emotional intelligence at work, and in particular the impact of emotional intelligence on the job performance of Engineers. Thirdly, there is a discussion on

emotional intelligence and how being a more emotionally intelligent leader can impact on your overall effectiveness. And finally, the article focuses on the challenge of how an individual engineer or manager can enhance their own emotional intelligence.

What is Emotional Intelligence?

Emotional Intelligence has its roots in the concept of "social intelligence" that was first identified by Thorndike in 1920. Thorndike (1920) defined social intelligence as "the ability to understand and manage men and women, boys and girls – to act wisely in human relations." Salovey and Mayer (1990) argue that, in essence, Thorndike (1920) defined social intelligence as the ability to perceive one's own and others' internal states, motives, and behaviours, and to act towards them optimally on the basis of that information.

Following Thorndike, Gardner (1993) included social intelligence as one of the seven intelligence domains in his theory of multiple intelligences. According to Gardner, social intelligence is comprised of a person's intrapersonal and interpersonal intelligences. Intrapersonal intelligence relates to one's intelligence in dealing with oneself. "In its most primitive form, the intrapersonal intelligence amounts to little more than the capacity to distinguish a feeling of pleasure from one of pain. At its most advanced level, intrapersonal knowledge allows one to detect and to symbolize complex and highly differentiated sets of feelings ….to attain a deep knowledge of …..feeling life" (p. 239). In contrast, interpersonal intelligence relates to one's intelligence in dealing with others and is the ability to "notice and make distinctions among other individuals and, in particular, among their moods, temperaments, motivations and intentions" (p. 239).

Salovey and Mayer (1990) were among the earliest to propose the name "emotional intelligence" to represent the ability of people to deal with their emotions. They defined emotional intelligence as "the subset of social intelligence that involves the ability to monitor one's own and others' feelings and emotions, to discriminate among them and to use this information to guide one's thinking and actions" (p. 189). They posit that life's

tasks, such as the task of a high school student having to adapt to the transition to college, "are laden with affective information, that this affective information must be processed, and that individuals differ in the skill with which they do so" (p. 189). While they point out that emotional intelligence is a subset of Gardner's view of social intelligence, they note that emotional intelligence does not include the general sense of self and appraisal of others, as does social intelligence, but more specifically focuses on the recognition and use of one's own and other's emotional states to solve problems and regulate behaviour.

More Recently, Goleman (1995) adopted Salovey and Mayer's definition, but expanded the construct to include a number of specific social and communication skills. He proposed that emotional intelligence involved abilities that can be categorized as self-awareness, managing emotions, motivating oneself, empathy, and handling relationships. Weisinger (1998) described emotional intelligence as "the intelligent use of emotions: you intentionally make your emotions work for you by using them to help guide your behaviour and thinking in ways that enhance your results" (p. xvi), And Goleman, Boyatzis, and McKee (2002) propose that emotional intelligence involves leadership competencies that can be categorized as self-awareness, self-management, social awareness, and relationship management.

In 1997, Mayer and Salovey formulated a revised definition of emotional intelligence. They pointed out that their "earlier definition now seemed vague in places and impoverished in the sense that they talk only about perceiving and regulating emotion, and omit thinking about feelings" (p. 10). They put forward a revised definition which they say corrects these problems, and state that emotional intelligence is a set of interrelated skills involving "the ability to perceive accurately, appraise, and express emotion; the ability to access and/or generate feelings when they facilitate thought; the ability to understand emotion and emotional knowledge; and the ability to regulate emotions to promote emotional and intellectual growth" (p. 10).

Emotional Intelligence in the Workplace – Job Satisfaction and Job Performance

In relation to emotional intelligence in the workplace, organisations are settings that require interpersonal interaction. Most of these interactions are related to the performance of job duties, for example, dealing with internal and external customers, working with and reporting to supervisors, working with a team, cooperating and coordinating with colleagues, and working with other teams throughout the organisation. Employees with high levels of emotional intelligence should be able to master these interactions in a more effective manner. Without any empirical evidence, Goleman (1998) argued that emotional intelligence is related to job performance. And Ashkanasy and Hooper (1999) have argued that the showing of positive emotion is associated with a high likelihood of success at work.

Recent empirical research supports those claims. Wong and Law (2002), in an exploratory study, found that employee's emotional intelligence was positively related to their level of job satisfaction and job performance. Therefore, if an individual was high in emotional intelligence, there was a much greater chance that they would be happier in their jobs and also perform better. Wong and Law (2002) used the Wong and Law (2002) 16 item emotional intelligence measure to measure emotional intelligence, and the sample for their study consisted of 149 supervisor-subordinate dyads. The supervisors were 60 middle and upper-level managers enrolled in a part-time management diploma course at a large Hong Kong University.

So, what has this to do with the job performance of Engineers? One might argue that much of an Engineers role is primarily focused on cognitive based performance, that traditional general intelligence is a key performance indicator, and that emotional intelligence cannot impact the performance of an engineer over and below his/her general level of intelligence. The existence of a single measure of intellectual ability or general intelligence is orthodoxy both among psychologists and in the general public (Gardner, 1998). General intelligence is the ability to acquire basic knowledge and use it in novel situations. There are basic assumptions underlying the theory of general intelligence, one that people are born with a fixed, potential intelligence, and two, general intelligence can be measured (Gardner, Gottfredson, 1998). The measurement of general intelligence

consists of completion of number series, pattern recognition, and analogies designed to capture mathematical-reasoning, verbal, and spatial-visualization abilities.

In an interesting study, Lam and Kirby (2002) investigated whether emotional intelligence would account for increases in individual cognitive-based performance over and above the level attributable to traditional general intelligence. The participants in the study were 304 undergraduates (152 men and 152 women) at a university in the Western United States. Each participant completed a paper-and-pencil measure of individual cognitive performance, a short version of the Multifactor Emotional Intelligence Scale (MEIS, J. D. Mayer, P. Salovey, & D. R. Caruso, 1997) and the Shipley Institute of Living IQ Scale (Western psychological Services, 1967). The participants ranged in age from 18 to 33 years. They found, as expected, general intelligence made a significant contribution to the prediction of individual performance of a cognitive task (Gottfredson, 1998). However, in addition, overall emotional intelligence uniquely explained individual cognitive-based performance over and beyond the level attributable to general intelligence.

It has been common belief that, when emotions are intertwined with role, performance, or both, they tend to interfere with task achievement (Ashforth and Humphrey, 1995). However, Lam and Kirby (2002) point out that "because individuals with well-developed emotional intelligence are able to identify and control their own emotions and those of others, they are less likely to be paralyzed by fear, hijacked by negative emotions, and strangled by anxiety, all of which have negative effects on both individual and team performance (Seipp, 1991). Conversely, people may use the same control to channel positive emotions and use them to achieve maximum personal engagement and productivity in themselves" (p. 138).

Emotional Intelligence and Leadership

To be an effective leader or manager, a person needs the ability to use knowledge and to make things happen. These can be called competencies, which Boyatzis (1982) defined as "the underlying characteristics of a person that lead to or cause effective and

outstanding performance" (p. 21). Whether direct empirical research is reviewed (Boyatzis, 1982; Bray, Campbell and Grant, 1974; Howard and Bray, 1988; Kotter, 1982; Luthans, Hodgetts, & Rosenkrantz, 1988; Thornton & Byham, 1982) or meta-analytic syntheses are used (Campbell, Dunnette, Lawler, & Weick, 1970; Goleman, 1998; Spencer and Spencer, 1983), there are a set of competencies that have been shown to cause or predict outstanding leader and manager performance (Boyatzis, Stubbs, and Taylor, 2002). Regardless of author or study, they tend to include three clusters: (1) Cognitive or intellectual ability, such as systems thinking; (2) self-management or intrapersonal abilities, such as adaptability; and (3) relationship management or interpersonal abilities, such as networking. The latter two clusters make up what is called emotional intelligence competencies (Goleman, 1998).

Leadership involves the interaction of leaders with other individuals. Leadership is embedded in a social context. Once social interactions are involved, emotional awareness and emotional regulation become important factors affecting the quality of interactions. Good leaders need to have a good understanding of their own emotions and those of others, and be able to regulate their own emotions when interacting with others. Leaders need to play different roles at different times, and more importantly, good leaders have the ability to select the right roles for the situation.

In addition, supervisors with high emotional intelligence and emotional maturity are more likely to use supportive behaviour and treat their followers with psychological benefits, such as approval, respect, esteem and affection, as they are more sensitive to feelings and emotions of themselves and their followers (Wong and Law, 2002). There is evidence (Fisher and Edwards, 1988) that the supportive behaviour of leaders has a positive effect on the job satisfaction of followers. Dansereau et al. (1995) have shown that leaders are able to affect the performance of their subordinates by supporting their feelings of self-worth. Wong and Law (2002) found that leader emotional intelligence affects the job satisfaction and organisational citizenship behaviour of followers. Organisational citizenship behaviour is "individual behaviour that is discretionary, not directly or explicitly recognized by the formal reward system, and that in the aggregate promoted the

effective functioning of the organisation" (Organ, 1988). Examples of organisational citizenship behaviour include volunteering for overtime when needed, and representing the organisation favourably to others outside the organisation.

So, in order to be an effective Engineering Manager or Leader, you need to have the ability to use your knowledge and to make things happen. Your own self-management, such as adaptability, achievement orientation, imitative, and optimism, and your ability to manage relationships, such are inspiring, developing and influencing others, are key competencies in the overall performance of your role.

Enhancing Your Own Emotional Intelligence

This section focuses on the challenge of how a leader or manager can enhance their emotional intelligence competencies. Unlike IQ, which is considered relatively stable and unchangeable, research on emotional intelligence indicates that it can be improved through learning (Cherniss & Goleman, 1998, Goleman, 1995; Boyatzis et al., 2002). However, because social and emotional learning is processed differently than is cognitive or technical learning, it necessitates a different training and development approach (Cherniss & Goleman, 1998). This section looks at the development of emotional intelligence, which can be divided into four important stages: in (1) building awareness (2) coaching and/or training, (3) transfer and maintenance, and (4) evaluating change (Tucker et al., 2000).

Building Awareness: Before coaching and/or training can begin, individuals must be motivated to commit to a change. Social and emotional learning is likely to be challenging, and can take concentrated effort over a period of time. In the workplace, An Introduction to Emotional Intelligence that emphasizes its importance to job performance, job satisfaction, leadership and career success often helps individuals to become more aware of its importance to them, and often motivates individuals to want to learn more.

When individuals become more willing to learn about their own levels of emotional intelligence and its impact on their work, a useful tool at this stage is an Emotional Intelligence Competency Measure. There are a number of emotional intelligence measurement instruments available. One is a 360 degree Emotional Intelligence Competency Inventory (Boyatzis, Goleman & Hay Acquisition Co., 2002). This Inventory provides an opportunity for individuals to select their own feedback team from colleagues, peers, managers, and direct reports. Participants are encouraged to select a team of individuals whose feedback they value. The usefulness of 360 degree in this instance is that often individuals are not highly aware of their own social and emotional strengths and areas for development, and that getting feedback from individuals whose input they value will greatly help with the individual's self-assessment.

Coaching and/or Training: Individual Coaching and/or Training designed to enhance the emotional intelligence of leaders and managers needs to be highly experiential in order for the necessary behavioural changes to take place. First, the sessions and/or workshops need to provide an opportunity for participants' to further explore their dreams and aspirations as leaders. Secondly, space needs to be provided to help individuals to further explore, through additional assessments and activities, their current behaviours, their strengths and areas for development (Boyatzis et al, 2002). Thirdly, the coaching/training needs to maximise on self-directed change, providing opportunities for participants to set clear goals, providing frequent opportunities to practice throughout the training, building in feedback and support, and maximising opportunities to enhance personal insight (Cherniss & Goleman, 1998). And finally, a positive relationship between the coach/facilitator and the learner is crucial if individuals are to succeed (Grencavage & Norcross, 1990; Horvath & Symonds, 1991).

Transfer and Maintenance: Research shows that the transfer and maintenance of specific skills are directly correlated with the degree to which the organisation values learning and development in general (Tracey, Tannenbaum, & Kavanagh, 1973; Senge, 1990). In addition, it also highlights the importance of a supportive environment over time for the development of social and emotional competencies (Hand, Richards, &

Slocum, 1973). Therefore, individual success in the transfer and maintenance of social and emotional skills is largely contingent on the support given by the organisation. Organisations can reinforce, encourage, and enhance individuals' skills by modelling desired competencies, reminding individuals to use the skills, and reinforcing the individuals' use of the desired skills. In addition, because self-awareness is at the heart of emotional intelligence, reflection can be especially valuable during the transfer and maintenance phase (Chermiss & Goleman, 1998).

Evaluating Change: At the end of an agreed period, the individual will need to take the opportunity to evaluate the change for themselves. Where have I made personal and behavioural changes, and how has this impacted on my performance at work, my performance as a leader, and to my overall effectiveness within the Organisation.

Conclusion

In conclusion, emotional intelligence is a set of interrelated skills involving "the ability to perceive accurately, appraise, and express emotion; the ability to access and/or generate feelings when they facilitate thought; the ability to understand emotion and emotional knowledge; and the ability to regulate emotions to promote emotional and intellectual growth" (Mayer and Salovey, 1997, p. 10). In the workplace, research has shown an employee's emotional intelligence is positively related to their level of job satisfaction and job performance, and that overall emotional intelligence uniquely explains individual cognitive-based performance over and beyond the level attributable to general intelligence. In addition, if leaders and managers in an organisation have high emotional intelligence, the job performance and organisational citizenship behaviour of individuals in the organisation will be enhanced.

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