Goal-Setting For Safety

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Introduction

Following the Piper Alpha disaster and the subsequent public enquiry, Lord Cullen recommended that the Health and Safety Executive shift its emphasis towards an 'auditing of systems' approach, rather than an 'inspection of sites' approach. Although primarily aimed at the offshore industry, the implications for all industries are that management will have to develop safety management systems that encourage safe working practices, rather than responding to the consequences of accidents. In order to facilitate the recommendations, the Cullen report (1990) explicitly advocated the use of goal-setting as a technique that might be more widely used.

It could be argued that any and all attempts at improving safety performance at work inevitably incorporate the notion of achieving particular goals or targets. For example, all employees new to a workplace must complete a process of safety induction; all operatives on a building site must undergo 'tool-box' training once a week; all construction site management must complete a formal health and safety course; every sub-contractor must submit a written safety policy prior to being awarded a contract, etc., are all targets or goals. Thus, most people involved in safety at work try and attain goals or targets, even if they are not explicitly aware of it. It is typically the case, however, that although most people understand what goal-setting means, (ie setting targets or objectives), very few are aware of the optimal ways to set goals or the contingent factors that might affect a successful conclusion.

Core findings

Goal setting theory is primarily aimed at task performance in the workplace, and is based on the central idea that goals are the immediate, though not only, cause of human action (Locke & Latham, 1990). By their very nature, goals motivate people to focus their attention and action, to try harder and to persist until a desired future state has been reached. The usefulness of goal-setting for increasing task performance has been demonstrated in many countries, across a variety of occupations. It is critical, however, that a goal matches the performance criteria being monitored, (i.e. attaining the goal of improved safety in the workplace is measured by monitoring and assessing several safety performance indicators). If a goal is accepted by employees, virtually any type of behaviour that is able to be measured can be improved.

The main aim of any goal is to place sufficient demands and challenges upon people in order to motivate them to achieve higher levels of performance. The amount of effort and energy expended to achieve a goal, depends to a great extent on how much of a challenge the goal represents to those who are trying to reach it. In general, assuming the goal is accepted and people are committed, the more of a challenge the goal is, the more effort people will exert to

reach the goal. This is because when goals are acted upon, more attention is directed to the activity specified by the goal, than other non-goal related activities. Demonstrations of this effect are provided in a goal-setting study conducted in a west country factory (Cooper et al, 1993), whereby the occurrence of accidents related to specific behaviours for which goals had been set, reduced considerably. Conversely, the occurrence of accidents related to other safety behaviours, for which no goals had been set, continued at its previous rate, and in some departments increased. Similarly, in an HSE funded goal-setting study in the construction industry (Duff et al, 1993), improvements in safety performance were found in scaffolding, access to heights and housekeeping categories for which goals had been set, whereas no appreciable improvement was found in the personal protective equipment category for which no goals were set.

It should be recognised, however, that people will be reluctant to try and reach a goal that they think is unrealistic or impossible to achieve (e.g. Zero-accidents in the workplace, or 100% safety performance). If the goal is thought to be unrealistic, people's commitment to reach the goal will be adversely affected, to the extent that the goal will be rejected. Thus, unrealistic goals tend to demotivate people. This raises the question of how do we know when a goal is demanding or challenging, but not beyond the realms of achievement? Determining the optimal level of a challenging goal can be done in two ways. The first method is to compare the high performance levels achieved by relatively few individuals, with the average performance levels usually obtained by the majority of employees. The average high performance level then becomes the goal. This method allows the goal to remain achievable, as well as providing a challenge to the majority. The second method entails establishing the current performance levels of a group as a whole, to provide a baseline with which future performance can be compared. The workgroup as a whole then discusses what level the goal should be, until consensus and agreement is reached.

In order to direct peoples focus of attention more effectively, goals should be stated in very specific terms (e.g. all ladders placed on a site must be long enough to be at least 5 rungs above a working platform), rather than be too vague or general (e.g. ladders that are too short should not be used). Although this may sound little more than applied common sense, in practice, goals are rarely implemented correctly. Typically, goals are set that are too broad. This allows people to interpret the effectiveness of their performance against a multitude of performance indicators, which may or may not be compatible with the intended performance improvements. In contrast, a specific goal only allows comparisons with specific aspects of performance. Therefore, a specific, challenging goal clarifies what constitutes good performance and removes ambiguity. This leads to maximum arousal and causes people to focus upon the particular activities and resources needed to achieve a goal. Another benefit of specific goals is that most people are reassured by, and more satisfied, from having a clear appreciation of what is expected of them.

A specific, challenging goal may also affect performance by motivating people to find ways to overcome obstacles, usually by changing their planning and approach towards the task goal. An example of this is provided from the Broadgate construction development in London. Management's goal was that the working conditions should be second-to-none. Because of the high profile nature of the site, management placed high emphasis on the importance of working safely. Throughout the duration of the site, it was found that many sub-contractors developed their own safety features, in addition to those prescribed by the main contractor. These included

drilling extra holes in steelwork to provide anchor points for fixing safety harnesses; designing simple toeboard clips, etc. This and other research related evidence shows that provided people are committed, striving for a specific, difficult goal typically stimulates creative thinking and problem solving, to ensure success.

Contingent Factors

Although a goal should be challenging, realistic and expressed in very specific terms, being confronted with a challenge does not always guarantee high performance. At least five factors are known to affect subsequent performance. These are: [1] an individuals or workgroups ability; [2] their choice of how difficult the goal should be; [3] their commitment to reaching the goal; [4] how confident they are in being able to reach a goal; [5] how complex the task goal is; and [6] whether or not they are provided with information feedback as to how well they are performing in relation to the goal.

An individuals or workgroups ability to perform a task will obviously limit the extent to which a task goal will be reached. Ability is normally judged by how well someone has done on the same or similar tasks in the past. Within the context of safety, insufficient ability is more likely to be related to a lack of knowledge about the safety aspects of a job, rather than a lack of ability per se. This can be addressed by the provision of safety training that is focused on the specific elements or behaviours necessary to allow people to achieve their safety goals. Again, although this sounds obvious, it is often the case that safety training covers a wide range of events or situations that typically are not relevant to the individuals being trained. Examples of this include a company that provided 'tool-box' talks to all operatives on a specific topic every week, on every one of their sites. Even when the activities incorporated in a particular week's topic were not occurring on any of their sites, or the topic was not relevant to the particular trades on site, the training sessions still went ahead. Providing safety training that is not particularly relevant to the task at hand is not only likely to trivialise safety, but is also likely to demotivate those involved.

The choice of how difficult a goal should be, will be influenced by what the individual or workgroup would ideally like to achieve, what they expect to achieve, and what is believed to be the minimum that should be achieved. A goal determined by ideals is more than likely to be based upon wishful thinking more than reality, and represents what could happen if everything went right. This type of goal is typically reflected through mission or vision statements issued by boardroom executives, which state that safety is a top priority; that the company has set a goal of zero-accidents and that all employees should behave safely and follow company safety policies. A goal based on expectations is typically based on a realistic assessment of what can be accomplished, based upon past experience. Success or failure in attaining previous goals, the likelihood of adequate resources, the expected amount of managerial support, and the importance of the goal are all primary factors likely to influence assessments when choosing the difficulty level of a goal. A goal based on the minimum that should be achieved reflects the minimum levels of performance that people will be satisfied with. Assessments of goal-difficulty levels based on minimum requirements perhaps reflect the fact that organisations typically have multiple goals. Very often, however, these organizational goals are in conflict with one another, the case of productivity Vs safety being a familiar one. Organisations faced with conflicting

goals, typically, trade-off goals, so that one goal will be reached at the expense of another. Choosing the goal-difficulty level based on minimum requirements is often seen to be a compromise that leads to the satisfaction of several conflicting goals. Indeed, a goal based upon the minimum required is the typical choice, rather than the expected or ideal goal.

Challenging goals only lead to higher performance when people are committed to them. Commitment refers to the degree to which the person is attached to the goal; considers it significant or important; and is determined to reach it, even in the face of setbacks and obstacles. Acceptance of and commitment to goals is a crucial factor in performance, in that as commitment declines, performance also declines. Factors which have been found to enhance commitment fall into two broad categories. Those which convince people that achieving the goal is possible, and those which convince people that achieving the goal is important. Managers can play an important role in facilitating commitment to goals, by persuading their workforce that the desired goals are both achievable and important. In addition they should provide demonstrable ongoing support. If ongoing support is not provided, the importance of achieving the goal will be undermined, which can result in rejection of the goal.

Commitment to a challenging goal can be considerably improved by allowing employees to participate in the goal-setting process. For many people, a goal set and delegated by others serves as a disincentive, which may lead to people rejecting it. In the study conducted on construction sites by Duff et al (1993) a comparison was made between assigned (delegated) and participatively (jointly determined) set-goals. On the sites where operatives participated in the goal-setting process there was much greater improvements in safety performance, compared to sites where safety goals were assigned to operatives. The motivational mechanisms of participative goal-setting operate through ensuring that people understand what is being asked of them, and by involving them in the decision making process. In essence this means allowing the workforce to be involved in deciding goal difficulty levels, until consensus is achieved. This results in ownership of the improvement process and a public commitment to the final decision. Encouraging participation and acceptance of goals does not mean that employees should be given complete freedom to set their own goals, but that difficulty levels should be arrived at by a process of sensible and realistic discussion. Taking part in discussions to decide the goal level to be achieved, not only makes it clear to employees how challenging and specific the goal should be, but also clarifies for all parties concerned, the best strategy to adopt, and what resources may be needed to maximise goal achievement. There is not much point, for example, in setting a goal of 95% wearing of personal protective equipment on site, if the necessary protective equipment is not available, or is not suitable for the task. Further benefits derived from participatively setting goals, include better working relationships between employees and employers, improved job satisfaction, and the reduction of perceived conflicts between competing organizational goals, such as safety vs productivity.

People's confidence in their own abilities to perform a task, will influence their choice of how difficult a goal should be, and the amount of effort they will spend in trying to reach a goal. Someone who is very sure, and has every confidence in their own task abilities is more likely to set a challenging goal, and be more committed to reaching it, than someone who is uncertain. Within the context of safety, increasing peoples confidence, to enhance their perceived task competence and performance can be done in three ways. The first involves the provision of

safety related information and/or safety training to ensure they are knowledgeable about how to perform their job safely, the appropriate person or department to turn to if something becomes unsafe, what to do in an emergency, etc. The second involves the judicious use of praise when things are done correctly, rather than punishment when things are not done properly. Praise is one of the most powerful social reinforcer's known to man, and only need be given every so often. Punishment, on the other hand, must be given immediately and every time for it to be effective. Clearly, someone cannot be punished every time they do something incorrectly, such as committing an unsafe act, simply because they will not be seen every time they do it. The third involves placing the person with a high performing role model. Research has shown that observing and working with a high performing role model causes the person to model themselves upon that individual until the appropriate behaviours are internalised. When they feel confident in their own abilities, they become self-motivated to set themselves even more challenging goals. This suggests that new employees should be placed in work groups whose membership has a high regard for working safely.

Research findings indicate that specific, challenging goals produce better performance improvements on simple rather than complex tasks, although improvements can be expected for both types of task. This is because on simple tasks, the amount of effort expended leads directly to improved task performance. Conversely, complex tasks involve decisions about when, where and how to allocate effort for maximum effect. This means that any effort used has indirect effects upon performance. Managerial and supervisory functions are deemed to be complex tasks, because they include multiple demands upon the individual from various organizational sources. Conversely, at the shopfloor level, demands only arise from the task-in-hand itself, and is therefore deemed to be relatively simple. These differences in task complexity might partially explain the differences in results between studies to improve safety via a focus upon specific behavioural components of a task, and those whereby management attempt to improve safety, using a variety of methods. For example, a craft operative has only to incorporate the specific aspects of safety pertaining to his task, whereas line management not only has to monitor safety performance to ensure that all operatives are working safely, but also has to co-ordinate the distribution of necessary resources, monitor and investigate near-miss incidents etc, in addition to the normal productivity demands from the organization. Therefore, the complexity of the managerial function also inevitably incorporates competing goals, of which, one will be reached at the expense of the others, at a particular moment in time. This suggests that focusing efforts solely on line management to improve safety, as is done in many organizations, is unlikely to be as successful. It would appear, therefore, to be imperative to focus safety behaviour improvement programs directly at the shopfloor level, in conjunction with line management acting as facilitators within a formal safety management system. Indeed the results of many safety related goal-setting studies support this.

So far little mention has been made about letting people know how close they are to achieving their goal - in other words information feedback. Feedback is usually defined as 'information about the effectiveness of particular work behaviours' and is thought to fulfil several functions. For example, it is directive, by clarifying specific behaviours that ought to be performed; it is motivational, as it stimulates greater effort; and, it is error correcting, as it provides information about the extent of errors being made. Research has shown that feedback by itself, can lead to higher levels of performance. However, in combination, goals and feedback are far more

powerful than either one alone. Goals inspire individuals to achieve particular levels of performance, while feedback allows the person to track how well he or she is doing in relation to the goal, so that if necessary, adjustments in effort can be made. Feedback can be provided verbally, or graphically. If verbal feedback is to be given to individuals it should be done in a helpful and friendly manner, to minimize any adverse emotional reactions. Positive feedback should be given prior to discussing areas that need improvement. Needless to say, any feedback given should not only be based on fact, but should also be specific. In most goal-setting studies aimed at improving safety, feedback has been posted graphically on large boards, within a particular department. This has the effect of stimulating conversation among those involved, about the particular aspects of the safety programme that have contributed to good or bad results. Indeed, on many construction sites it is not uncommon to see a form of safety feedback chart, in the guise of a sub-contractors league table. Typically, these tables reflect the main contractor's subjective rating of various aspects of a sub-contractors safety performance. Elements of both goal-setting and social pressure are implicit in these tables, in that they are designed to motivate performance improvements, especially for those at the bottom of the table. People's reaction to these tables and any other type of feedback will, however, be influenced by how accurate they think it is. For example, if the feedback indicates that scaffolding on site is extremely safe, but the actual state of the scaffolding on site is poor, any future feedback will be ignored. In other words any mismatch between the feedback and actual conditions will severely damage the credibility, or trust in the feedback. It is essential, therefore, to base feedback on objective measures of safety performance, in order to avoid damaging the credibility of, and trust in, the feedback.

In summary, a specific, challenging goal has maximum effect when an individual has confidence in his/her ability to perform the task, is committed to the goal, the task is simple, and accurate feedback is made available, so that the person can track their progress in relation to the goal.

Setting realistic goals

Given that specific challenging goals can improve performance, within certain boundary conditions, how is it put into operation? Goal-setting may be undertaken with groups or individual employees. In the examples that follow, goal-setting is discussed in the context of groups, although the procedure is the same for individuals.

Identify the problem

The first step involves deciding upon what it is that is to be improved. This is typically determined by the identification of a specific organizational problem that is constantly arising, although not necessarily so. Within the context of safety, an analysis of a companies accident records is likely to identify a number of areas where improvements in safety performance are possible. Similarly, an audit of a companies safety management system is likely to identify areas where improvements are possible. For example, do the company accident records provide sufficient information to enable thorough analysis of accident causation? Is there a disproportionate number of incidents related to a particular work process? How many accidents have occurred as a result of not following permit-to-work procedures? etc.

Identify the performance indicators

Once an area for improvement has been identified, it is necessary to identify the particular behaviours and/or situations that are critical to performance. For example, are ladders being tied-off around the ladder rungs, instead of both stiles? Are bricklaying gangs clearing their rubbish and debris off scaffold lifts as they go, or do they just leave it? Is eye protection always worn when using a disc cutter? Are gloves always worn when personnel are handling sharp objects?, etc. Once identified, the critical behaviours or situations would form an objective basis for a performance indicator. Once the relevant performance indicator has been established, the critical indicators need to be written in behaviourally specific terms, in order for the criteria of performance to be assessed consistently across employees. These critical indicators are then used to measure subsequent performance.

Measure performance

Performance should be measured for a period of time to provide a baseline, by which future performance can be compared and goal difficulty levels be set. In any safety behaviour improvement programme, the period of time required to establish a reliable and stable baseline, is between four and six weeks, depending upon the amount of observations undertaken during this period. In essence as a rule of thumb, the more observations that are undertaken during this period, the more reliable the baseline will be. Experience has shown that three times per week is sufficient to provide reliable data. At the end of the baseline period, meetings are held with the workforce to establish goals.

Goal-setting procedures

At the goal-setting meetings generating high goal commitment and high subsequent performance, may best be achieved by following certain procedures. Experience has shown that these are:

a] Display the results of the baseline measure on a feedback chart of some description. Provide an explanation as to why improvements in the particular area of job performance are necessary, how the performance indicator was obtained and developed, and how it is used should be given. The goal-setter should not only emphasise that the baseline measure is the current performance level and that performance can and should be increased, but should also emphasise the benefits of reaching the goals, to the employees themselves, as well as to the company.

b] Stress the importance of employees participating in the setting of a difficult, specific but realistic goal to improve performance. This encourages commitment and acceptance of goals and also minimises the likelihood of resistance.

c] Emphasise that some goals are unrealistically high and therefore not expected. Goal-setting only works if the goals are perceived as realistic and attainable.

d] Stress that no sanctions will be applied for not reaching the goal. This ensures and encourages positive actions. Previous research has shown that employees are likely to test this element. If

sanctions are applied, it is probable that employees will reject the goals, with subsequent detrimental effects upon performance.

e] Emphasise the necessary actions that will enable the employees to reach the goal. This helps to clarify the particular behaviours that are required.

f] Ask the employees to set a difficult, specific goal that the majority agrees with. If the goal appears to be too easy, suggest a more difficult level. Essentially this is a period of negotiation between management and employees, the outcome of which should be satisfactory to both parties.

g] Explain to the employees that as performance is monitored, the results will be posted on the feedback chart at regular intervals, which will be placed in a prominent position, in their workplace.

h] Ensure that an authority figure who is supportive and who will exert reasonable pressure on subordinates to reach the goals set, is present during the goal-setting session. Ongoing demonstrable management commitment to the safety programme is of extreme importance. Many organizational improvement programmes have floundered because managerial commitment was lacking.

Once the goals have been set, safety performance is monitored for a specified period of time e.g. 3 months, 6 months etc. A question that often arises is how long should a goal be focused on? This is difficult to answer, because to a large extent it depends upon the difficulty level of the goal, and how rapidly a goal is reached. Intuitively, it would seem that once a goal has been reached and been maintained for a reasonably extended period of time, it would seem appropriate to change the goal. This might entail raising the difficulty level still further, or setting a new goal for a different set of safety related behaviours. In the factory study by Cooper et al, each department focused on one goal for a period of four months. Subsequently new goals were set for different sets of safety behaviours for a further four months. This process is set to continue ad infinitum. Another question often raised is how many goals should be in operation at any one time? If there is more than one goal should they be pursued simultaneously or sequentially? In the Duff et al study, the maximum number of goals being pursued at any one time was two, although over a period of one year there were three goals in total. These were introduced on each site with a four week time lag between each of them. Other studies have focused on as many as twelve goals at any one time. However, these were short term goals of approximately one hours duration. The answer, therefore, is dependent upon the particular circumstances that an organization finds itself in, although Locke & Latham (1990) would advocate that three to five goals is the maximum, as any more than this will cause people to lose their focus of attention and effort.

It is hoped that this article will shed some light on the use of goal-setting in increasing safety performance. An understanding of the theoretical concepts associated with goal-setting can only lead to its optimum use when applied in practice. Within the field of occupational safety, the proper application of explicit goals may well prove to be a watershed, which will lead to significant reductions in the occurrence of accidents in many industries.

References

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