using your brain

Six sigma offers major opportunities for organisations to enhance quality and competitiveness, but some foolish things are being done in its name. Professor Tony Bendell and Dr Nick Corke identify the exclusive emphasis on left-brain thinking as the major culprit and propose a more balanced, integrated approach to allow creativity into the heart of the six sigma approach

Any approach as powerful and successful as six sigma had to start a stampede. An increasing number of UK and European companies - in sectors as diverse as food, automotive, engineering, packaging, financial, service and aerospace - are now using the approach and obtaining major benefits. Given six sigma's origins in the American South West, 'stampede' may be the right metaphor. However, as with all new initiatives, a lot of cowboys are coming onto the scene!

From a relatively obscure in-house company-specific programme, six sigma training has become an ill-defined commodity with many different public offerings; one effect of this has been its dilution. Clearly, it is impossible to cover the content and approach of a 20-day black belt programme in ten days and a 12-day green belt programme in six, but this is what we are seeing, both here and in the US. The terminology is changing and creating different, less powerful programmes.

Regardless of their duration and coverage, these programmes have one common feature: they all focus on the use of statistical techniques and other 'left brain' tools such as FMECA. This may be the great strength and the great weakness of much of so-called six sigma methodology.

Statistics and six sigma

Clearly, the six sigma approach is statistical, since it uses statistical tools in a project framework. The key to the six sigma approach is the role of black and green belts, the full and part-time improvement engineers/managers.

Black and green belts are accountable for auditable improvement and returns. They clearly need statistical techniques to deal with the special and common causes of variation in the organisation's processes, and step through the classic six sigma project stages:

- define
- measure
- analyse
- improve
- control
- transfer

However, we also need black and green belts to mentor, lead, take innovative approaches, encourage idea generation and think laterally - not literally. Many current six sigma programmes do not cover this, at least not effectively or systematically. At the same time, much six sigma training suffers from 'statistical and software overload.' Many would-be green and black belts experience 'trauma' during training and first projects - traditional six sigma training includes more than 140 statistical concepts and techniques - and has been described as 'drinking through a fire hose.'

Most programmes include a basic core of statistical tools covering the measurement, analysis and control stages of six sigma

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Role of green and black belts in six sigma:
- project-based improvement
- financial returns
- clear responsibilities and accountabilities
- solo/leadership/team-based
- idea generation/innovative thinking/lateral thinking
- mentoring

projects. But the limitations and rigidity of this toolkit are being increasingly criticised[1]. What is left out might be more interesting - one such neglected area is that of right-brain tools.

Right-brain thinking, creativity and innovation can contribute to successful six sigma implementation. There are many simple and appropriate right-brain tools. The real issue, however, is the integral holistic use of the right and left brain: while the left brain is useful for certain key six sigma aspects and tasks, the right brain is crucial for others. For example, the 'define', 'improve' and 'transfer' stages of six sigma projects clearly involve right-brain activity, innovation and creativity. The right-brain is also crucial for the key black and green belt roles of team leadership, idea generation and mentoring.

Choosing a colour that suits

Because black belts, in particular, typically have a leadership role on improvement projects, it makes sense that the people selected for this role will ideally have strong leadership/project management

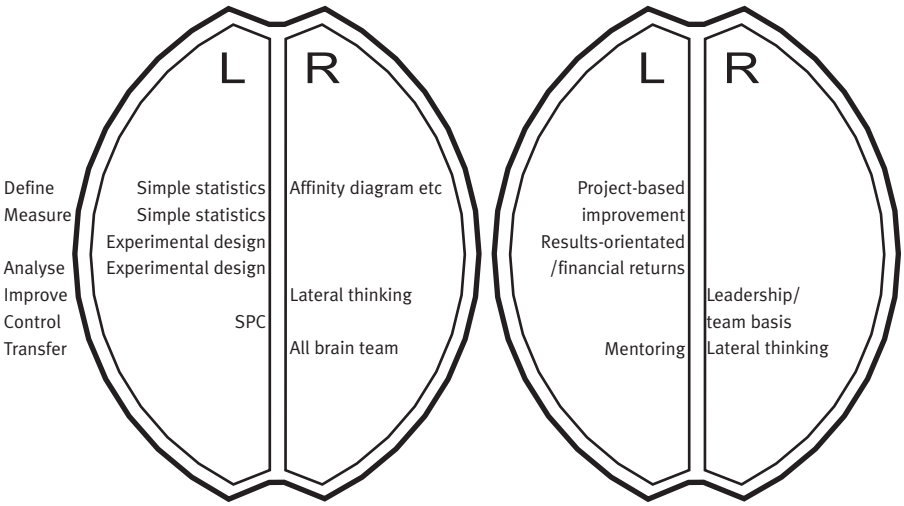


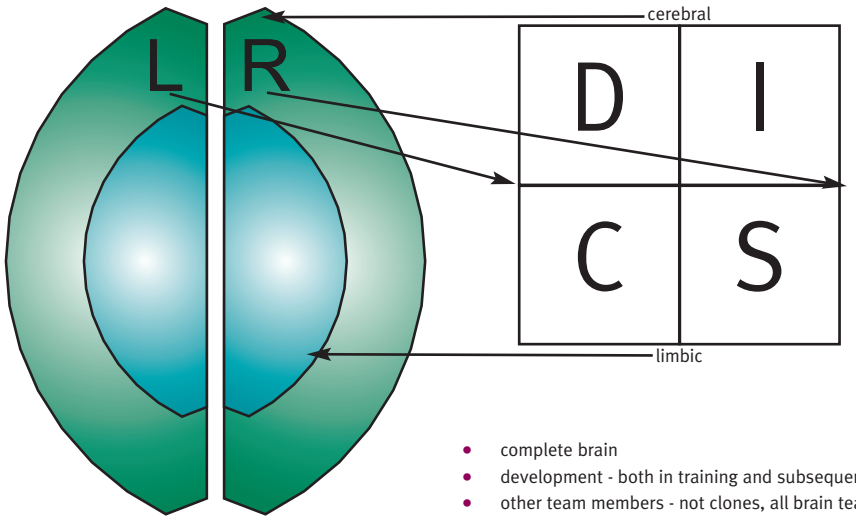
Figure 1. Six sigma tools and their requirements for teams

competencies and skills. A talented leader will use all parts of the brain, but unfortunately there are very few such individuals. More often than not, individuals who are strong in the use of their left brain - the 'd' quadrant of the DISC system - are picked: they will often take a goal-oriented, 'do it now' approach, which seems appropriate to the role. Their strengths, however, may blind them in their dealings with others.

Other six sigma project members (yellow belts) need to be carefully selected to create a balanced team; the ideal would be a whole-brain team. Unfortunately, we have a natural tendency to choose people who think as we do, and use the same areas of the brain. For a successful project, creativity, enthusiasm, team-building skills and analytical skills - characteristics from different parts of the brain - are necessary. For effective six sigma project teams, the ongoing development of all four sectors of people's brains will be a key issue. A complete brain team gives the opportunity for individuals to learn from the others in the team, in the situations they face.

As we said earlier, right-brain thinking tools are perhaps most vital in the 'define', 'improve' and 'transfer' stages of six sigma projects. In the 'define' stage, a good approach/sequence would be to start with the 'six thinking hats', affinity diagram, inter-relationship diagram and problem definition sheet techniques, which allow teams to discover issues and hidden agendas at the outset of a project and reach an effective consensus on what the mission is, what to do and in which order.

Figure 2. selecting six sigma team members



- complete brain
- development - both in training and subsequently
- other team members - not clones, all brain team?

Philosophical problem?
- 'never has there been a better time for statisticians to come out of their closets in European industry!' Tony Bendell, as quoted by the late Norman Harris
- while statistical thinking and techniques are essential for, and core to six sigma they are not six sigma
- this should be true not just in the organisation of six sigma programmes, but also in the toolkit/training

Doing the 'right thing'

The key issue at the 'improve' stage is ensuring that potential predicted gains are realised, which will involve some left-brain thinking and tools, such as standardising operations. However, right-brain thinking and tools are also relevant in implementation. Although the most common approach is that of past experience, it begs the question: 'Is that the best approach for this situation?' Similarly, at the transfer stage, the right brain is important for creative thinking and a good approach/sequence is to use the 'movement' and 'provocation' tools, 'scout' to evaluate the approaches and 'please' to make them usable.

Of course the remaining stages of six sigma projects - 'measure', 'analyse' and 'control' - should involve some creativity; these stages are not just automatic/left-brain. Real improvement comes from being creative, going beyond what we have always done. Further, improvement happens when something is done consistently; new methods and approaches must be used and used again, otherwise they will be lost. It is essential to plan the retention of what has been learnt by recalling and doing: this is key to maintaining improvement.

The purpose of this article is not to criticise six sigma: the toolkit and the project approach are not new, but the whole package is very beneficial. However, just as in every other aspect of quality, six sigma may be 'good' (creative, well thought through, relevant and involving) or 'bad' (projects and training by rote). Clearly, while the latter may well yield gains, these pale into insignificance compared to the potential of the former

References:

1 See the article by Andrew Sleeper in the recent 'Six sigma exchange online newsletter,' www.sixsigmaexchange.com

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While Nick Corke still sees himself as being primarily left-brain, he balances his interest in both the practical application of statistical techniques in six sigma programmes and the practical development of creativity. Although based in Belgium, as a senior consultant for Services Ltd, Nick Corke spends the majority of his time in the UK working with clients on process optimisation, creativity and six sigma programmes as well as on Services Ltd/Smallpeice Enterprises' public six sigma courses.