

Lean Six Sigma Green Belt

Training – How much statistics is too much?

Feedback forms - critical for measuring the effectiveness of the training. For both individuals and companies who provide training, one of the most important outputs from delivering a course is the feedback forms.

There are lots of ways a business can measure its ability to win work, but in the case of training courses those forms that participants rush through before heading home at the end of the last day are critical for measuring the effectiveness of the training itself. I take them very seriously and always ensure there's time for them to be completed – it would be ironic to spend my time advocating Continuous Improvement, and then miss an opportunity to gain data that could help me continuously improve my own performance.

How Much Statistics Is Too Much?

Recent feedback from a 5-day Green Belt got me thinking about what is really a fundamental challenge with delivering the course. In the section titled "Things I Disliked", one participant answered "Felt we could have had a bit more time on the statistics part", while another said "A bit too stats heavy". As no other participants mentioned statistics in their feedback I could just take an average and reach the conclusion that we've got it exactly right, but it does raise an interesting question. How much statistics is too much?

It's obvious from the belt structure that if you're trying to become a Black Belt you need to be someone who is not terrified by the thought of training modules called things like Logistic Regression, Demand Segmentation or Fractional Factorials. Equally, if you're heading for a Yellow Belt course, you can be sure that you will pick up some genuinely useful, easy to apply improvement techniques that don't even require a calculator. Statistics wise the middle ground is a bit of a grey area though, or a green area if you prefer. To be a Green Belt, how much aptitude for statistics do you need?



At Bourton Group we offer two Green Belt courses, one five days and one ten days.

The thinking behind this is nothing to do with the ability of the participants though, it's far more practical than that.

Firstly, rather than being constrained by strict definitions of different training levels, an organisation should give its employees whatever skills are actually going to be helpful in their work. There are plenty of organisations out there that know they can benefit hugely from the advanced Lean skills that Green Belt offers but are just not ready or willing to take the leap into improvement based upon statistical process control. Training their people in techniques they will not get the chance to use would be a waste.

Secondly, the ten-day course includes the use of specialist statistical software which requires individual licences. We have no doubt that proper application of this tool will provide benefits far more than the cost, but we are also very aware that it will approximately double the up-front cost for a course of 12 people.

It's easy to see why, for some organisations, a 5-day Green Belt is a more attractive option than ten, and that's fine, there is huge amounts to be gained from either.

Ironically though, this arguably means that the five-day version is actually a bigger challenge intellectually than ten-day, and harder to train too. This is because the ten-day course, while the statistical concepts are more complex, you simply input data, click a button and it's all worked out for you. On the five day course there's far less mathematical complexity, but what there is you must work out for yourself.

I have seen participants physically flinch when presented with a slide featuring a formula which demonstrates how the Poisson distribution allows us to determine probabilities.

While I enjoy the challenge of explaining it, I know that there'll always be some people in the room longing to go back to discussing the benefits of 5S.

The truth is, on a five-day course packed with different Lean Six Sigma techniques, no one present is going to use every single one of them. Participants need to have understood enough to cross the 75% threshold in the open book test on day five, but everyone always does, because well over 75% of the course is entirely understandable to anyone, whatever their previous background with maths and statistics. The aim of the test is not to catch people out, it is to embed the learning by encouraging them to go back through the material and review what they've just spent the last five days immersed in.

Some people who do the course will be particularly inclined to the more statistical elements and will probably find themselves coming up against the limitations of the course during their work. The limitations are evident too – we cover Measurement System Analysis (MSA), with the concept and need for it well explained, but the exercise is in only one type, Gauge R&R. (I get them judging the quality of M&Ms against predefined criteria. One tip from me - if ever you want to make yourself popular as a trainer, introducing chocolate to the course goes a long way.)

If you would like to find out more about this subject, or how we can help make your business, better then give us a call on 01926 633333, or email us at info@bourton.co.uk.

This is limiting though, in post-course projects they may find other MSA techniques more appropriate, but they are difficult to train without the software. Equally, 5-day Green Belt covers process capability for normally distributed data but doesn't offer any solutions if your data is not normal, other than doing some improvement work to make it normal before considering process capability. The answer for Green Belts with problems like this is either that they need to ask a Black Belt for help, or even better, go on a Black Belt course themselves.

On the other hand, there will doubtless be people who complete 5-day Green Belt and subsequently steer clear of the statistical stuff when applying it to their work. That's absolutely fine too – there is a huge amount to be gained through application of advanced Lean tools like Mistake Proofing, an understanding of push and pull systems, or the ability to lead projects using the DMAIC structure, and you simply don't have chance to cover these on a Yellow Belt course. This doesn't mean they'll be ignoring anything statistical, they will understand the purpose of it and will know when to ask for help if it's needed, they just won't be doing that themselves. When I have used Mistake Proofing techniques and been able to prove a dramatic increase in safety performance and a decrease in costs related to accidents, I've never been criticised for not knowing the process 'p' value.



Conclusion

In the end, some people will always be more inclined towards numbers than others. For some (myself included) good quality Lean Six Sigma training can turn a fear of statistics into a relative aptitude through clear explanation of the purpose, and demonstration of the benefits. If it doesn't though, at Green Belt level, it doesn't matter. Whether your feedback at the end of the course is that there was too much stats or not enough, you will still be in a much better position to facilitate beneficial change in your organisation simply because you were there.