

Six Sigma Project Assignment: Know Your Black Belts

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In October 2001, the *Journal of Quality Technology* published an excellent paper by Roger Hoerl on Six Sigma Black Belts (BBs) titled, "Six Sigma Black Belts: What Do They Need to Know?"¹ I wish I had read this article back then. I didn't come across it until after implementing Six Sigma projects myself and learning lessons the hard way. After reading it, I realized some of my hard-learned lessons matched the author's experience.

Hoerl's article extensively covers the Six Sigma body of knowledge and some concepts of designing a Six Sigma BB course. However, the subtopic on BB development issues could be expanded by incorporating the lessons learned.

Hoerl shares an important thought in his summary: "A key reason Six Sigma is not just a collection of tools is the critical role of the BB in the overall implementation strategy. The tools are clearly not new, but the way in which they are implemented and supported is new."

Similarly, in the *Six Sigma Forum Magazine* article "Making Six Sigma Last," William Parr writes, "Broadly speaking, organizations need to work carefully and hard to balance the actual skill and personality mixes of BB candidates against their needs."² Parr's article continues the discussion of BB development, specifically by emphasizing the importance of matching BB skills with organizational needs and project opportunities.

Careful project selection is crucial for the longevity of a Six Sigma program in any organization—a point that has been discussed at length by many Six Sigma experts recently. A short summary of this work will help provide a solid introduction to the crux of this article: a model for Six Sigma BB development that is based on matching BB skills with the right projects.

Selecting the Right Projects

The first question to consider when selecting Six Sigma projects is, "Why should we even initiate a project?" Why not just act on something that is considered very important and cost saving to the organization instead of calling it a Six Sigma project?

Six Sigma improvement opportunities often require support from cross-functional teams and local management, as well as a significant time commitment. Also, these types of improvements use considerable amounts of money and resources, so a project management approach is highly recommended for effective management and corporate due diligence. While the Six Sigma method provides the mechanism to run the project, project management provides the discipline to manage the resources. As a result, process performance improvement and predictability increase.

We can see how pursuing the wrong project wastes skilled resources, ultimately increasing an organization's time to meet market demands while decreasing revenue and stakeholder interest. The marks of a wrong project include:

- No linkage to the organization's strategic goals and objectives
- Too many external factors that influence the success of the project
- No financial backing
- No buy-in from local management (even with good financial backing)

Projects with these characteristics are highly likely to fail and set a precedent, eventually making it difficult for any future initiatives.

So, how do we select a "right" project? Six Sigma books and articles have discussed many quantitative and qualitative approaches. For instance, in his article, "20 Key Lessons Learned," Gerald Hahn provides some basic guidance for selecting "initial projects to build credibility rapidly."³

All these formulas, equations and weightings boil down to one important question: Will these projects save money? But perhaps the question should be, "Has enough effort been put into assigning the project to the right BB and team?"

Matching the Right People to the Right Projects

Beyond selecting the right projects, there is a danger of assigning the right projects to the wrong people. Saying someone is the wrong person in this context is not derogatory—it just acknowledges that some BBs might not be ready for more complicated projects.

One might wonder how this can happen. After all, the very purpose of training BBs is to unleash them to pursue high-return projects and reap the benefits for the organization. Are we calling into question the training's effectiveness? Or the body of knowledge on which the training is based? No. Even with a well-structured training program and comprehensive body of knowledge, there is still a preparedness that is required and that must be assessed before assigning projects.

Six Sigma's traditional four-week intensive training can be rather intimidating and can make many people feel like pseudo statisticians. Hoerl's paper dis-

cussed integrating the statistical tools into overall approaches to improvement. Most programs teach BBs to apply the tools; however, the underlying assumptions come from continual learning.

When an organization assigns a project to a BB, it is making a major assumption on the BB's readiness to take on a high-return project. Organizations with structured Six Sigma programs will assign Master BBs (MBBs) to support the BBs. This, however, will not compensate for a BB's lack of readiness. Developing the BB into an organizational asset is a smart approach from the organization's point of view. Keeping the human element in mind during Six Sigma implementation can make the program powerful and sustainable.

Figure 1 (p. 28) shows an approach to assessing BB readiness. The X axis presents a timeline of a BB's career. Y axis 1 shows the project weight in Likert scale terms. Y axis 2 shows cost savings per project. You might notice the cost savings/project in the BB's career timeline gradually increases with the exposure they acquire.

Another important portion of this graph requires logical reasoning behind various weighting. This is not designed to make the assigning more complex than it already is.

However, keeping longevity of the program and retention of well-trained resources in mind, it is worthwhile to invest in a well-designed analytical approach.

Let us discuss in detail a BB's career timeline.

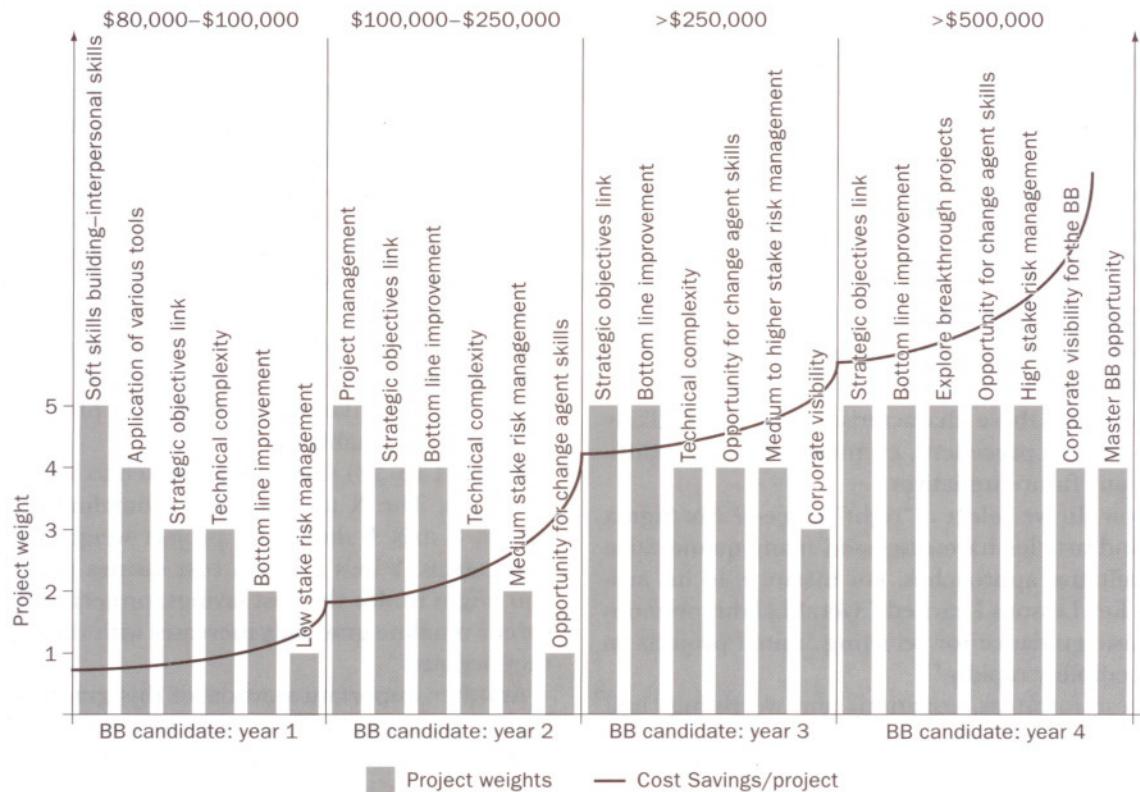
Black Belt: Year One

State of mind:

- Has just acquired knowledge and is energetic and willing to test the knowledge on real-time projects
- Insecure when jumping into high stake projects
- Wants to show early success to management

Skill set gaps:

- Might have managed small improvement teams or a charted project with a wider cross-functional team accountable to cost savings
- Somewhat confused on several tools that were taught during training

Figure 1. **Black Belt (BB) Project Assignment**

- Little or no project management experience
- Little or no financial management experience

Project assignment based on these considerations:

Among the right projects that are already scheduled for implementation using Six Sigma, select those that offer the opportunity to develop interpersonal skills, potentially require applying many analytical and statistical tools, and that have medium technical complexity and low stakes (meaning not many risks that need to be mitigated).

Notice Figure 1 shows a high weight for soft skill acquisition. This is what can't be learned in a four-week Six Sigma training course; it has to be acquired. We still need to maintain a medium complexity, as the candidate is already a BB. We are not looking for a huge savings in this timeline; however we need to do better than breaking even. Merely breaking even will not get support from management.

These projects will not require a project manage-

ment program. Return on investment (ROI) greater than two is desired at this level. For project management, basic Gantt chart and interdependency between the major activities with the project should be known.

Black Belt: Year Two

State of mind:

- Has just acquired successes in low stake projects; energetic
- Willing to raise the bar on cost savings
- Willing to increase the stake of the projects
- Developed interpersonal skills and the ability to work on a team

Skill set gaps:

- Not experienced in managing larger projects via professional tools

IF A SIX SIGMA PROGRAM IS NOT IMMEDIATELY PAYING BACK, IT SHOULD NOT BE ABRUPTLY CANCELED. SENIOR MANAGEMENT MUST EVALUATE THE REASON FOR THE DELAY IN PAYBACK AND REALIZE LARGER CULTURAL CHANGES MIGHT BE THE FIRST BENEFITS OF SIX SIGMA.

- Lacks change agent skills to implement some new processes
- Not able to create financial worksheets without assistance

Project assignment based on these considerations:

The project assigned to this BB will be larger and more complex. A Gantt chart manually drafted on a piece of paper will not suffice. Resources need to be managed more effectively and reported continually. Because the stake is raised to medium, the BB has an opportunity to use project management tools and learn and implement more disciplined risk management principles. Note in Figure 1 the technical complexity is still moderate, as the project management is already of increased magnitude. These BBs are assigned to projects with potential financial gains almost doubling the previous year's expectations. ROI during this year should be more than 2.5.

Black Belt: Year Three

State of mind:

- More confidence after seeing substantial success in previous projects
- Frustration due to resistance on implementing new processes
- Willing to raise the stake provided there is a strong strategic link to objectives

Skill set gap:

- Lacks strong change management skills

Project assignment based on these considerations:

The BB has now acquired project management

experience managing reasonably complex projects and has been successful in mitigating risks at a moderate level. The BB is ready to handle projects with strong strategic links and ROI of more than 3.5. With the strong strategic link, obviously the BB is ready to face some corporate visibility. The Champion can be certain this candidate will produce results of this magnitude and importance. The candidate has come a long way, seasoned through combinations of constraints and challenges.

A typical organization might place a BB right out of training and certification into this type of higher stakes project. Can you imagine what will go through the BB's mind? "Am I being set up for failure?" "Am I ready for a project of this magnitude and importance?"

Black Belt: Year Four

State of mind:

- Been there, done that
- Higher confidence and ego
- Looking for challenges and higher complexities

Skill set development:

- Opportunity to manage programs
- Opportunity to elevate to a MBB

Project assignment based on these considerations:

At this point of maturity, the BB is not primarily satisfied with a higher salary. The organization must take a careful look at the BB and make sure to assign projects with high corporate visibility, higher complexity, high returns, breakthrough potential and high stakes. If the organization fails to recognize the emotional need of this highly accomplished individ-

ual, competitors or other hiring organizations will. To prevent the organization from becoming a BB grooming center, it is prudent to cater to the BB's emotional needs while harvesting a good return for the organization.

Implementing the Model

This project assignment model is suggested for organizations that start Six Sigma programs from scratch, training in-house candidates to be Green Belts and BBs. An organization might ask whether it will always have to wait three or four years before assigning high-savings, high-ROI projects to BBs. The answer depends on BBs' maturity and progression. There are a few who could reach the year four level during their second year.

Also, the model is a guideline for increased success and should not be interpreted as a firm requirement. Organizations can, of course, recruit external candidates at a year four level maturity for projects that require high savings and ROI while grooming internal candidates.

There are pros and cons to taking this recruitment path. In "21 Common Problems (and What To Do About Them)," Forrest Breyfogle, wrote, "This is a compelling strategy; however, finding someone who has the right skill set and can fit into a company's culture is easier said than done. It is preferable to develop those within an organization who have the right BB or MBB personality profile, have already established internal relationships for getting things done and understand the organization."⁴ On the other hand, external candidates can bring in new ideas and approaches internal candidates wouldn't consider in the existing culture.

Examining the various stages of a BB's evolution is one way to couple the human side of project assignment with an analytical approach, so that everyone wins. However, caution must be exercised while implementing this model. Organizations that have deeper cultural issues might need to do some groundwork before assigning projects. If a Six Sigma program is not immediately paying back, it should not be abruptly canceled. Senior management must evaluate the reason for the delay in payback and realize larger cultural changes might be the first benefits of Six Sigma.

Many critical factors affect the benefits of changing an organization's implementation strategy based on these guidelines. Mark Goldstein, in "Six Sigma Program Success Factors," detailed 13 success factor

elements.⁵ I would add senior management commitment, adaptability, sound program management and employee development to Goldstein's list.

The benefits of this approach will be reflected in reduced variance in project schedule, reduced variance in savings claimed in the charter and lower turnover of trained BBs. Organizations that have been using a different strategy for Six Sigma program implementation can set up a baseline metric before adopting this approach. Baseline measures involve calculating the variance between charters' claimed project finish dates and the actual finish dates of past projects, and between charters' claimed project savings and savings actually realized.

Also, measuring BB retention in the organization over time will be key. Organizations planning to implement this strategy from the beginning should develop metrics to review these measures during project reviews.

This is the next step in the evolution of Six Sigma implementation. Despite all the existing discussion on BB development and project selection, little has been discussed on the two combined. Because this is new ground, we can't expect long-standing results yet. It is hoped this article is the beginning of this new direction.

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5. Mark D. Goldstein, "Six Sigma Program Success Factors," *Six Sigma Forum Magazine*, November 2001.

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