



SkillSignal's Guide to Behavioral Based Safety



CONTENTS

- 05 What Is Behavioral Based Safety In Construction?
- 11 The Benefits Of Behavioral Based Safety In Construction
- 15 Pros And Cons Of Behavioral Based Safety In Construction
- 21 A Use Case Of Behavioral Based Safety in Construction: Reducing Fatalities and Injuries



WHAT IS BEHAVIORAL BASED SAFETY IN CONSTRUCTION?

Construction sites and their safety have, and always will, come with an extra component: behavior. While we might view safety on site as something manageable purely by adequate training and putting the correct safety measures in place, this is not always the case.

In fact, safety on construction sites also has a lot to do with the psychology of workers. Their personalities and behavior styles can make a huge impact on how operations work

and whether or not they succeed in a safe manner. The same goes for how worker-to-worker interactions and worker-to-superior interactions occur.

In this guide, we'll be giving you the rundown on behavior-based safety. This includes what it is, how it works, and the best ways for you to implement its principles on your construction sites.

What Is Behavior-based Safety?

The [Cambridge Center for Behavior Studies](#) defines behavior-based safety as follows:

“A process that creates a safety partnership between management and employees that continually focuses people’s attentions and actions on theirs, and others, daily safety behavior.”

This definition makes one thing clear: BBS is an approach and a process, not just an idea. It is not enough to simply assume the intentions of others or trust that safety tips will not go unrecognized.

Rather, BBS should use empirical research to study the habits and behaviors of workers, and then apply this knowledge in a constructive way.

Ultimately, a greater understanding of the person and their cognitive processes can greatly influence the success of safety measures on-site.

Let’s take a look at what is called the “ABCs” of behavioral-based safety.



The ABCs of Behavior-based Safety

So, what does ABC stand for in this context? BBS falls underneath the broader field of study called [organizational behavior management](#). Here, much research has been done on Activators, Behaviors, and Consequences.

The activator is what triggers a behavior - and behaviors always have consequences. For example, think of the following incident on site. A worker approaches his or her co-worker about a failure to adhere to safety regulations. Depending on the behavior exhibited by the former, and depending on the behavior exhibited by the latter, this exchange could turn ugly.

The co-workers may become aggressive or hostile, and this could lead to a number of different consequences. For example, the hostility between the two could lead to a lack of productivity and adherence to the rules. The same type of thing can happen when it comes to a worker-superior relationship.

For these reasons, it’s important to study behaviors, and put measures in place to adjust these behaviors.

Training certainly supplies workers with the knowledge to succeed in safety adherence. But, there is more to it than that. Keep reading to find out what we think are the best 3 ways to implement behavior-based safety on your construction sites.

Implementing Behavior-Based Safety In Construction

1.

Keep on top of incident and accident records

If you are new to implementing BBS, there is a sure-fire way to start really doing your research and finding solutions to problems. This is by looking at records and incident reports, and determining where the most safety problems on-site lie.

By reviewing the ABCs of the incident (the activator, behavior, and consequence), you can try to figure out how best to approach such situations in the future.

For example, changing the activator may change the behavior. If this doesn't work, you need to put some real effort into studying and working on the behavior so as to improve the consequences.

You'll also be able to determine which departments need the most help. Therefore, you can begin to work on their relationships with each other and themselves. Behavior often stems from interactions as well as beliefs about oneself.

2.

Gain some knowledge on positive versus negative reinforcement

The idea of positive and negative reinforcement is a widely studied field in psychology. When you reward someone for their behavior, this is called positive reinforcement.

Offering things like rewards and incentives for adhering to rules and reporting safety hazards can be a great way to use positive reinforcement on site.

On the other side of the coin, negative reinforcement is when a behavior is threatened with some kind of punishment. For construction workers, the punishment is more often than not an injury. This is because not adhering to correct safety practices can result in harm to the worker or a co-worker.

This is not a direct threat from the supervisor. Rather, it is a consequence that cannot be avoided without the proper behavioral response to the activator. Again, proper research and insight into how the activator triggers the individual or group's response can make a real difference to the consequences.

3.

Make use of direct punishment to change behaviors

While injury is an indirect threat, there are also ways of making direct ones. For example, by using punishments like written warnings and disciplinary hearings to dissuade workers from behaving in incorrect, unsafe manners.

These measures are necessary in construction. They are a way to make sure that people adjust their behavior according to how the company wishes to operate.

However, it's important to remember that construction sites naturally see people from all different walks of life, with different backgrounds, mentalities, and, of course, behavioral styles.

Because of this, threats of direct punishment will not work for everyone. So, it is important to figure out a way to change either the presence of the activator or the extremity of the behavior. Processes need to run smoothly, and keeping on top of how your employees behave is a must.



Final Thoughts

Of course, none of the above is possible without the right kind of example being set by superiors and management. Adequate training and proper research on behavioral-based safety are necessary to improve how safety operates on your construction site.



THE BENEFITS OF BEHAVIORAL BASED SAFETY IN CONSTRUCTION

Behavioral-based safety, or BBS, is based on psychological principles and studies of positive and negative reinforcement. It refers to the study and implementation of behavioral psychology when it comes to safety in the workplace.

This is extremely important in construction, where the risk of accidents and injuries can cause harm to people, profits, and the process

itself. BBS in construction is all about studying people and their behaviors. Then, you can take measures to see how the consequences of these behaviors affect accident and injury rates.

In BBS, there are ABCs you need to know: Action, Behavior, and Consequences. Every action leads to a behavior, and every behavior leads to a consequence - whether it be good or bad.

3 Key Benefits of Behavioral-Based Safety in the Construction Industry

Here, we will outline the main benefits of studying the ABCs of behavioral-based safety and using the knowledge gained to intervene. Ultimately, the goal is to change behaviors to increase safety on construction sites.

1. BBS can reduce job-related injuries

Accidents and injuries are notoriously common on construction sites. [Studies show](#) that construction work makes up a large portion of the top 10 most dangerous jobs in the world.

From the standpoint of behavioral-based safety, a lot of these accidents and injuries can happen as a direct result of the cognitive processes and behavioral patterns that workers display.

For example, think of a worker who reacts with panic at a machine malfunction. The action of the machine malfunctioning leads to panicked behavior. This can have negative consequences if the worker does not immediately act swiftly and behave according to their training. The behavior of this worker can then lead to harm to either themselves or others.

BBS proposes that behaviors have consequences above and beyond those that occur naturally. For desirable behaviors that adhere to professionalism and safety training, BBS studies show that positive reinforcers are the way to go. Rewarding good behavior will reinforce this kind of behavior and make it far more likely to happen again.

On the other side of the coin, there are also negative reinforcers for unfavorable behaviors. For example, written warnings and disciplinary hearings. While positive reinforcers seem to work better, sometimes the latter is necessary.

So, BBS can reduce job-related injuries by providing rewards or consequences for desirable and undesirable behaviors.

It is important to note that constant positive reinforcement is effective if you want to reduce

job-related injuries. People will be far more likely to be mindful of safety if they know they will be rewarded for it.

2. BBS can minimize lost production hours

Of course, with the decrease in unsafe practices comes the increase in production hours. When workers adhere to training properly and gear their behaviors towards a common goal of safety, they will perform their work more efficiently.

When a behavior results in a negative consequence, like damage to the site or slowed down work, these consequences add up. On construction sites, these stacked-up consequences can lead to a buildup of lost hours.

Behavioral-based safety minimizes this through intervention. In the same way that positive reinforcement can change behaviors that result in accidents or injuries, you can also use it to improve efficiency on site.

For example, you may notice that a worker is demotivated and working slowly. Motivating this worker with positive reinforcers can help incentivize them to complete the job. Therefore, it boosts their productivity. As a result, they will get their job done more efficiently and you won't lose valuable time.

This is also true of damage to the site. The more mindful the workers are, the less likely it is that they will make avoidable mistakes. BBS is about making sure that worker behaviors keep the site running smoothly and productively. Intervention to change unfavorable behaviors, then, is key.

3. BBS can improve workplace morale

Positive reinforcers are something that people will want to work towards. Because of this, using them can improve workplace morale in a big way. As people work together to decrease unsafe behaviors, you can improve morale as well as workplace relationships.

This is where it is important to note that positive reinforcers can result in [durable behavior changes and more satisfied employees](#). The happier your employees, the higher the morale on site!

Workers will also be far more likely to form good relationships with each other and their superiors when there is a reward to work towards. For example, think of a conflict between workers on site. This can impact safety, minimize production hours, and cause rifts between or within departments.

When everyone works toward a common goal, however, good relationships and morale can skyrocket. This is also true of relationships between employees and their employers. The rewarding of good behavior results in the improvement in relationships between these two.

It is therefore important to understand that behavioral-based safety practices that focus on positive reinforcement when favorable behaviors are demonstrated are key to a happy workforce.

Fights and hostility can become far less likely, as people are presented with incentives to keep the peace. As a result, they will work together rather than in competition with each other.

Final Thoughts

As we can see, studying behavior and using positive reinforcers to change the consequences of actions can be of great benefit to construction sites. It affects people, profits, and processes in a positive way.

With BBS in construction, you can decrease injuries, increase production hours, and foster positive morale and relationships.

So, how can you apply these principles on-site?

Providing incentives for good behavior is a [tried and tested](#) way to reinforce it! So, keep behavioral-based safety in mind on your construction sites. In doing so, you will truly reap the rewards of a happier, safer, and more productive workforce.



PROS AND CONS OF BEHAVIORAL BASED SAFETY IN CONSTRUCTION

Behavioral based safety (BBS) is an approach that construction companies can take to improve the safety culture and thus the conditions on a construction site. It is based on the theory that reinforcement can influence future behaviors.

For example, if a worker reports an observed safety violation, they can be positively reinforced by a reward. As a result, it will lead to this type of behavior being repeated going forward. On the flip side, there are also

negative reinforcers and consequences like punishments for undesirable behaviors.

We all know that improved safety can have a ton of positive effects. It can affect productivity, profits, communication, and worker satisfaction. But how does this specific approach fare?

In this article, we'll be taking a look at some of the pros and cons of taking a behavioral based safety approach on construction sites.

Behavioral Based Safety: The Pros

It encourages employee participation

One of the things that BBS is all about is engaging workers and getting them to really throw themselves into ensuring safety for themselves and others in the workplace.

BBS aims to offer incentives for 'good behavior'. For example, alerting superiors to safety violations or simply taking measures to avoid these altogether. These incentives can come in the form of a reward that reinforces the behavior and makes it likely to happen again.

Positive reinforcement and reward is something people will want to aspire towards. As such, employees will be far more inclined to participate - whether it be in day-to-day safety precautions or specific safety training programs.

It aims to ensure a constructive use of resources

When properly implemented, behavioral based safety programs and procedures can actually save your construction site time and money in the long run.

This is because, naturally, less accidents mean less resources wasted. For example, proper safety precautions can help workers to avoid accidents that lead to broken machinery, injured workers, and having to redo projects. As such, costs go down as you are able to manage time better.

Workers can also become more productive when behavioral based safety is implemented. With the right safety precautions set in place, they can complete jobs far more quickly and efficiently.

It can improve communication and relationships

The theory that backs reinforcers to influence future behaviors proposes both negative

and positive reinforcers. However, positive reinforcement is the better option.

This is because the presence of positive incentives to perform well can lead to a sense of employee satisfaction. Workers will feel like their hard work is being recognized, appreciated, and rewarded.

It also encourages accountability. As such, it allows people to understand when they have gone wrong and when they have succeeded.

With satisfied employees comes improved communication between people on all levels of the construction process. Managers can establish a sense of trust and security between themselves and their workers. Employees can work together to achieve the same goals. Overall, this helps to foster better working relationships.

It provides a framework going forward

One of the most important benefits of behavioral based safety programs is that they can provide a framework and point of reference for future projects.

BBS is not just about providing incentives. It's largely about studying the action that leads to behaviors that ultimately lead to either positive or negative consequences.

Once the action and subsequent behaviors have been identified, safety managers can begin to intervene in ways that change behaviors and improve the consequences thereof.

Studying all of your workers and their behaviors is a lengthy process. However, it provides you with data that allows you to identify when safety may be at risk. You can also use this data to choose which workers will do best at certain tasks - thereby improving workflows.



The Cons

It can be difficult to maintain

Of course, there are some cons to behavioral based safety programs. In fact, it is a subject that has caused a divide in high-risk industries like the construction industry.

Some believe that it is a great way to maintain safety, while many believe otherwise.

The latter is largely due to the fact that BBS is definitely a difficult procedure to maintain. If it is not done properly, it can actually have adverse effects like resentful workers and even lower safety on site.

Gathering data on behaviors and identifying the actions that lead to them (as well as the consequences that occur) can be hard to do without the right tools.

This is why it is so important to use BBS to provide your workers with positive reinforcers. In addition, you need to provide your company with a well-informed framework going forward. If you are going to use BBS, it should inform the entire culture of your construction company and site.

It may lead to inaccurate reporting

Another problem that BBS can have is that it may, at times, skew reports.

When people are faced with the option of either a reward or a punishment, they may behave in such a way to avoid accountability when things go wrong. They may also try to pretend that they have adhered to all safety precautions so that they can be rewarded.

Again, to solve this problem, BBS needs to inform the culture of your company. As such, it may do you well to take advice from behavioral based safety experts. Also, do your research and dedicate entire teams and managers to the implementation of this kind of program.

While there are some cons to behavioral based safety programs, there are ways to ensure that they are implemented properly. Changing your company culture to fit a BBS framework and using positive rather than negative reinforcers is a great start.

Another great way to keep track of your workers and offer rewards is to make use of an app like [SkillSignal](#). SkillSignal is a safety software for construction companies that offers an easy and interactive way to log data and ensure compliance. Whether you decide to implement BBS or not, SkillSignal will help improve safety.

5 Best Sources to Learn More About Behavioral-Based Safety in Construction

1. Health and Safety Authority: Guide

In 2013, the HSA published their ['Behavior Based Safety Guide'](#). It's a 24 page PDF file on everything you need to know about BBS and its implementation. But don't be fooled by its length. Although it's short, it's also to the point and extremely educational.

It describes BBS and reinforcement theory, explains goal setting and feedback, gives you some tips on how to implement a BBS program, and even backs itself up with an interesting case study. This case study shows how a 20 year long BBS implementation worked onsite at an oil refinery.

If you're looking to gain some knowledge on the basics, this is the perfect source for you to use. You'll learn a lot about BBS practices in general, and you'll be ready to read more about how to apply them in a construction setting.

2. COAA: Guideline

Another good source that can help to guide you towards an understanding of behavioral-based safety is the Construction Owners Association of Alberta's ['Behavior Based Safety: A Best Practices Guideline'](#). It was published in 2008 and was developed using a consensus process.

The guideline is another great source to use if you're considering implementing BBS, but don't know where or how to start. It provides you with information reached through consensus by people with different viewpoints and interests. As such, you can learn from others' experiences and ideas.

It explains BBS, why it's useful, and goes into an in-depth guideline on implementing the process. Just keep in mind when reading it that things have changed in the world of BBS. So, it's a good idea to supplement this

guide with some additional, more current research on BBS.

3. SafeStart: Article

Now that you've covered the basics of BBS, you can move on to learning how it can and does correlate with the construction industry. Enter Larry Wilson's article entitled ['Behavior-Based Safety and the Construction Industry'](#).

The article was originally published in 2001 by the Construction & Engineering Safety Magazine. It's 20 years old, but that doesn't discredit its reliability as a source. In fact, Wilson has gone on to found and author SafeStart, a hugely popular safety awareness program.

In this informative article, you'll see a critical review of BBS. The author delves deep into whether BBS is appropriate for the construction industry, and whether it can be implemented properly in the coming years. It's really interesting to see how it was thought about back then, and reading more sources can show you how it has developed up to now.

4. Safety Management Group: Blog

The Safety Management Group is a professional safety service company that aims to reduce incidents, improve quality, and enhance productivity. Their website has a blog that focuses on safety culture.

The blog has a great article entitled ['Using Behavior-Based Approaches to Enhance Construction Safety'](#) that hones in on safety culture in construction in particular, with a focus on BBS. The article covers how behavioral-based safety can and has been implemented in the construction world, and discusses the benefits of this.

However, it's not just this article that can provide you with further knowledge and understanding of BBS. Take a look at their articles on safety culture, too. They are great resources for providing you with advice and tools that can help to establish and maintain a culture of safety (which you can easily do with BBS.)

5. ResearchGate: Review

On ResearchGate, there is a review entitled ['Behaviour Based Safety Approach And Factors Affecting Unsafe Behaviour in Construction Sector'](#). It's a journal article that focuses on how the human error of unsafe behavior can really affect accident rates.

In a nutshell, it talks about how the behavioral-based safety method is an effective process when it comes to behavior shaping and diminishing accidents and incidents. To make this point, it reviews several different studies that focus on unsafe behaviors and the effects of a BBS approach.

That's not all you can find on ResearchGate, though. Simply type 'behavioral-based safety' into the search bar and you'll be able to find loads of different articles that are easy to access. ResearchGate is a fantastic resource for you to access new knowledge and learning opportunities.

Final Thoughts

Hopefully, you find the above resources helpful as you delve into the world of BBS in construction. If you're still looking to find out more about BBS implementations, take a look at the rest of our blog - we cover loads of topics that are linked to behavioral-based safety.

So, have you decided to implement BBS? If so, SkillSignal definitely has the app for you.

We offer you an all-in-one field and site safety app. SkillSignal addresses everything that needs to be addressed when working in a high-risk workspace. This can help you on your journey towards implementing BBS practices - receiving in-depth reports means you're able to identify problems. And, in identifying problems and the data, you can use BBS to improve upon these problems you've identified! It's as easy as that.

Take a look at the rest of our website to find out more about our app and how it works. Or, check out our [blog](#) and read all about behavioral-based safety and more!



A USE CASE OF BEHAVIORAL BASED SAFETY IN CONSTRUCTION: REDUCING FATALITIES AND INJURIES

Behavioral based safety is a broad term used in fields that require workers to adhere to safety precautions and restrictions. It's the use of a psychological theory to influence behavior and, in turn, safety on site. And, what is a more relevant example when it comes to the importance of safety than construction?

Construction is a dangerous occupation with a high risk for injuries and fatalities. In fact, [Business Insider](#) lists the construction trade as

the 5th most dangerous occupation in America. The fatal injury rate in 2019 was 40 people per 100,000 full-time workers.

So, it's clear that, in some way, intervention into keeping construction workers safe is necessary. Enter behavioral based safety.

In this article, we'll be talking about how construction companies can use BBS and positive reinforcement to reduce fatalities and injuries in the construction field.

Behavioral Based Safety in Construction

The dangerous nature of the construction industry means that [safety](#) should always be a number one priority. So, how can behavioural based safety be used in a construction setting?

BBS proposes a set of ABCs to observe when you're implementing the theory. These are: activators, behaviors, and consequences.

What these ABCs refer to is that every event or action leads to or triggers a behavior. This behavior, in turn, leads to either a positive or negative consequence.

The goal of BBS is to make sure that these consequences lead to desired outcomes like profitability, productivity, and reduced risk.

In BBS, you reinforce by either rewarding or punishing the behavior. While a reward is

generally more used and is more effective, punishment can also act as a deterrent to stop the undesirable behavior from happening again.

Either way, the outcome should be to shape behavior in such a way that good behaviors occur more in the future.

In construction, it is obvious that the risk of fatalities and injuries is a significant one. Implementing BBS means rewarding desirable behaviors that adhere to safety regulations on-site, or punishing those that don't.

When you reward positive behaviors, they are far more likely to happen again. Let's discuss how fatalities and injuries can be reduced by using a BBS approach that focuses on positive reinforcement.

Use Case: How BBS Can Reduce Fatalities And Injuries

The importance of reducing fatalities and injuries

Of course, construction companies and managers want to make sure that there are little to no fatalities and injuries happening under their watch.

But saving lives and livelihoods, while extremely important, is not the only reason safety should be properly adhered to and regulated. Unfortunately, it is true that fatalities and injuries are also expensive.

It is estimated by various studies that [around 85% of accidents](#) in construction can be attributed to unsafe acts. And, when these accidents occur and result in a fatality, the cost of this employee fatality includes things like violation fines, legal fees, and compensations. This can work out to hundreds of thousands of dollars.

Lastly, BBS also affects productivity. With the possibility of a positive reward laying before people, they are far more likely to work hard and be vigilant.

So, it is clear that reducing fatalities and injuries is important not only in terms of lives but also in terms of profitability and productivity.

How BBS can help

How can you use behavioral based safety to reduce these accidents and trigger the positive effects we just mentioned? The best thing to do when implementing BBS, in this case, is to focus on behavior shaping.

Yes, this is the focus of BBS in general. But, it's especially significant in this case because unsafe behaviors may lead to serious accidents. So, you really need to shape and mold your workers' behaviors. You need to emphasize the fact that their behaviors can save lives.

There are many ways that you can do this. Some companies use rewards that change behavioral consequences from negative to positive. Others focus on reducing the activators that cause these behaviors in the first place.

Whether you tackle the ABCs from the end or the beginning, the result should be the same. Behavior should change for the better.

So, how do you go about this? First, you could try changing the consequences. For instance, you could introduce things like reward systems for adherence to safety regulations. You could also opt for the classic “__ days without an accident” trick. This gives your staff something to work towards, together.

Another option is to change the activators. You'll need to be ready to observe and intervene when necessary. If you are on the ball and observing activators that cause unsafe behaviors, you'll be able to practice intervention and stop these activators altogether. This, in turn, prevents the behavior from ever happening in the first place.

A time BBS has helped

There are multiple examples of when BBS has succeeded in reducing fatalities and injuries. One such example happened at a Shell LNG construction site in Nigeria. After implementing a BBS approach to safety, the project achieved a whopping 77% reduction in injury rates!

They did this with an approach that focused on the observation of behavior.

The project team drafted a list of unsafe behaviors and encouraged workers to avoid these behaviors. Observers used checklists to give feedback and monitor safety. Acknowledging positive behaviors with a checklist is a way of reinforcing them. And, as a result, unsafe behaviors were shaped for the better.

You can read more about the case study and its findings [here](#).

Final Thoughts

Reducing unsafe behaviors that lead to fatalities and injuries is a crucial step in the construction process. With behavioral based safety, you can use tools and processes to help you along the way. This will help to keep workers safe while improving productivity and reducing costs.

If you are interested in implementing BBS, check out [SkillSignal](#). Our all-in-one field and safety app allows you to log observations, offer safety training, and provide incentives for favorable behavior. This will help you to prevent incidents and ensure your construction projects run smoothly!

References:

<https://behavior.org/help-centers/safety/Articles%20of%20Interest/>

https://en.wikipedia.org/wiki/Behavior-based_safety

<https://www.aubreydaniels.com/media-center/sustaining-bbs-going-back-basics>

<http://www.behavioural-safety.com/b-safe-management-solutions/behavioral-safety-a-framework-for-success/>

<https://www.businessinsider.com/the-most-dangerous-jobs-in-america-2018-7?IR=T#8-structural-iron-and-steel-workers-27>

<http://www.behavioral-safety.com/b-safe-management-solutions/our-track-record/case-studies/5-case-studies/15-constructing-a-safety-culture>

https://www.researchgate.net/profile/Rafiq-Choudhry/publication/261183585_Behavior-based_safety_on_construction_sites_A_case_study/

http://www.bsms-inc.com/articles/behavioral_safety_interventions_a_review_of_process_design_factors.pdf

https://www.hsa.ie/eng/Publications_and_Forms/Publications/Safety_and_Health_Management/behaviour_based_safety_guide.pdf

<https://www.ncwriskmanagement.com/blog/2021/01/top-10-most-dangerous-jobs-of-2020>

<https://www.certaintysoftware.com/the-pros-and-cons-of-behavior-based-safety/>

<https://www.safetyandhealthmagazine.com/articles/behavior-based-safety-a-study-of-pros-and-cons-2>

<https://www.wolterskluwer.com/en/expert-insights/the-pros-and-cons-of-behaviorbased-safety-bbs>



93% to 100%

Compliance rate for SST, OSHA and internal worker inspections. No fines. No stop work orders.

1.1 hrs/worker 22%

Saving 1.1 hour/worker by shifting from paper to mobile worker orientation.

22%

Automating 22% of daily safety and compliance processes.

11.8 hrs/week 22x more data 100%

Saving 11.8 hours/week on paperwork, payroll and admin processes.

Capturing 22x more data, used in compliance dashboards and jobsite reports.

100% paperless jobsite.



SKILLSIGNAL™

SkillSignal is the fastest growing safety & compliance platform in Construction, trusted by thousands of users every day. Our 1-stop solution supports jobsite safety and simplifies compliance across the country for small, medium and large contractors. Our mission is to use mobile technology and data to improve the safety and lives of the men and women who build our beautiful cities.