

State of the Art in Job Aids: What They Are and What We Know By Tony Moore, Moore Performance Improvement, Inc.

Ed Kelley: Tony has worked with us for the last few years on a several projects, and we've benefited from his expertise in his previous work. He is the president of Moore Performance Improvement Incorporated. He has worked on workforce performance problems in a wide variety of industries. His videos, job aids, and training materials have been used in the construction of the space shuttle, in troubleshooting global inter-networks, computers, and automation systems.

Mr. Moore has trained employees from Canadian National Railroad, Southwestern Bell, Pontiac, GM, Ford, Chrysler, Caterpillar, Mobil Oil, and Rockwell International. He clearly has significant experience in a wide variety of industries. We are really happy to have him join us in some work that we have done on the Integrated Management of Childhood Illness (IMCI), which is a challenge for everybody involved.

But without further ado, I am pleased to present Tony Moore.

Tony Moore: Thank you. I appreciate your coming. Before I begin, I think there are some more things you need to know about me so you can put what I have to say in perspective. First of all, it is important to remember that I'm not a researcher, as I understand many of you are. Therefore, we speak somewhat different languages. I trust that you are not going to hold me to your standards, and in return, I will not hold you to mine.

In business and industry, we have come to believe in quality, measurement, and standards quite strongly. We have picked up some knowledge that we can share with you, but I want to stress that some of the work we do is not really applicable to what many of you in the audience do. Therefore you should not feel constrained and say to yourself, "I must be doing it wrong." Instead, you will have to examine the information I give you from a more pragmatic point of view. You have to ask yourself, "Is this going to be useful for me?"

That is the only true measure. If it is useful, adopt it. If it is not useful, don't. We believe in measures, but we don't go to the detail that I've seen in some of the QAP projects I've looked at. Our measures tend to focus pretty much on the elements that are important to business. Those elements include items such as profits, ROI, and have we had an impact on those kinds of things? Have we been able to reduce costs? Have we been able to improve productivity? Have we been able to approve quality? Can we measure that?

Frankly, in most business around the world, there is much opportunity for incredible improvements in performance. Sometimes when we make improvements in a position that has not been trained properly, or has not been job-aided properly, we get such incredible improvement that there is no need to do a statistical analysis to figure out whether or not it worked. It hits you right between the eyes! There isn't any question about the improvement.

Some of the people in my profession will do AD or ADH studies just to convince the perhaps skeptical management, because skepticism isn't unique to the health care industry. We can do things if they are willing to tolerate it, such as control groups. We can introduce a job aid in one population and not in the other and see if there is a change. Introduce it, take it away, reintroduce it and see if the measures vary along with that. They usually do.

I have brought along some industry examples to show you. These are some industry measures, and you are probably going to look at them and say, "That can't be possible!" Believe me, it is possible. I haven't been going through the projects and saying, "Which one will impress them?" It doesn't make any difference. You can reach in and pull it out and think all are dramatic.

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The father of performance technology, Tom Gilbert, developed the formula for predicting the potential for improvement performance. Tom was a theoretician. He was a Ph.D. who taught at the college level and did a lot of research in this area. Tom went around to General Motors and other big plants, and he analyzed different jobs in a wide variety of areas and found out it was typical for companies to have a potential of improving performance as much as 300%.

Now, you're not going to achieve that, but it is reasonable to assume that you can get half of that, and improve performance by 150%. That is what we tell our clients, while our private personal goal is really for 80%. We are confident we can get to it. The reason we can't get to 100% is because the formula is based on a star performer, the best performer of a given task. I'm not talking about workaholics who get a lot done because they are at their job fifteen hours a day. I'm talking about somebody who does it in an eight-hour day and does it consistently and outperforms the rest of the group average by 300% to 500%.

We can approach that level of performance, but we can't get to it because while we can manipulate the levers that have an impact, we can't control some things. It is none of our business to try and get inside the people and try and change them inside. We can't deal with IQ issues; we can't deal with physical or emotional capacities. That's not our business. And those variables will account for that maybe 20% that we can't get to.

As Ed said, I've applied this in a lot of industries across a lot of jobs, from blue collar to white collar, professional, paraprofessional, and unprofessional. It doesn't seem to make a difference. The numbers hold true. There's a variation, pretty wide variation actually, in the potential for improving performance. Tom did a lot of studying. The narrowest potential is in competitive sports; professional sports especially or the Olympics. He did a study of . . . who was the Olympic swimmer that won all those medals?

Participant: Mark Spitz.

Tony Moore: Mark Spitz. That Olympic swimming competition they found out that the potential for improving the performance of those competitors in the Olympics was infinitesimally small. They were as a group as good as they could get. If you're not into swimming, if you're into bowling, there's an Olympic bowling team. They've done studies on that. These guys are so good that the potential for improving performance with a real structured approach is only a couple of pins in their average, period, they're so good. But they've got some things going for them that the rest of us don't have.

What is the major difference between the workplace that you're familiar with and professional sports or Olympic sports? They're measured. They know where the end zone is. They know where the goal is. It's very clearly defined for them, and they know their progress play by play. It's that constant feedback, not only from just looking at the yard markers, but from listening to the crowd. Huge, huge difference.

We've got this myth about coaches in sports. We think they're so good because of that locker room speech. Whiff them up and we get them really excited. Tom Gilbert did a study of Bear Bryant, one of the most winning football coaches in college history. That myth followed Bear. Tom found out the speeches had nothing to do with Bear's success. Bear took a systematic approach to training his team. So that said, let's move into some of the slides.

Okay. I've made some assumptions about you as a group, which may be dangerous. I made two primary assumptions. Number one, you want to help performers in the healthcare industry to produce some sort of accomplishment, some sort of output, some sort of thing that's valuable to your organization's goals or some larger goal. If that's not your purpose, then perhaps this is the wrong meeting. The second assumption is that it is part of your job is to find ways to influence and improve worker performance. You want to find ways to influence and improve performance at low cost, or as low as you possibly can. One of the things that I'm going to do is to try to define job aids. I think it's important that we do that right up front because there are a lot of definitions out there.

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“Job aids” is one of those terms that have been fairly casually applied to a lot of things that don't fit my particular definition. What I am saying applies to just my definition. So if you're doing something else and calling it job aids, then what I'm saying probably isn't going to be applicable to what you're doing. I'm not proposing that you change what you're doing, because I'm sure what you're doing has value for your purpose. What I'm going to offer you if not an alternative is perhaps an adjunct to your definition, something that supplements your definition. We're going to discuss the advantages of using job aids as industry has discovered over the last decades and look at some of the caveats, because job aids are not a panacea. This is not the fad of the year, and job aids don't solve all the problems. There's nothing worse than a job aid that's inappropriately used, in a place where it should not be used, and where another solution is appropriate.

I'm going to show the results of using job aids. This is not an exhaustive case study, but I hope the numbers will be impressive to you. I'm absolutely convinced that you can achieve these very same things in your industry. I say this because even though your industry is different, the common denominator between your industry and all the others is people.

What we are doing is helping people perform their jobs. It doesn't make any difference what job it is. People have a tendency to say, well, this is good for training assembly-line people, but it really doesn't apply to us because we're knowledge workers. Yes, it does apply to knowledge workers. We can job aid knowledge work and we can do it fairly precisely. The biggest difference between job aiding for blue-collar and knowledge workers, is that it's tougher on us to capture that knowledge. We've got to mine deeper to get that behavior and that performance down. It's covert behavior, instead of overt behavior that I can observe. If you can define it, you can job aid it. If you can capture it, you can job aid it. If you can't capture it, you can't job aid it, and I defy you to train it effectively. How can you teach somebody something you can't define? I'm going to position job aids with other performance influences. Jim alluded to those earlier. Because again you need to be aware of how this fits into the bigger picture. You'll see later why.

I'm going to show you how to determine when job aids are appropriate and when they're not. Real important decision, okay? Job aids are used on the job while performing the task. I'm a stickler about this. I like to label these things that are going to be used on the job as job aids as long as management expects it to be used all the time. And you'll see why it's critical in some cases.

There are times when it may not be necessary to use a job aid all the time for a variety of reasons. The main reason is because the job is done frequently enough that it ultimately becomes memorized and there's enough feedback so that it stays reinforced. Once people have reached that level of expertise, then you don't have to use it. But I don't want them to say, oh, well, I don't need to use this job aid. I want them to be conditioned to say if it's called a job aid I've got to use it. I've got to find a name for this other thing. It looks exactly like a job aid, but I'm going to call it a learning aid. It's a crutch to help you get up to speed. Once you're there it's okay with management to dispense with it as long as your output is quality output.

Job aids tell you when and sometimes more importantly when not to take an action, to perform a task, probably the single most frequently missing element of a job aid. We find it real easy to tell people what to do, but we forget to tell them when or when not to, when it's appropriate, when it's not appropriate.

Job aids tell people not only what to do, but how to do it. A job aid is like having a coach who doesn't talk back or humiliate you. It guides you gently through your job. Job aids reduce guesswork and reliance on memory. Probably the second most powerful feature of a job aid, job aids don't forget. If it says one thing today, it says the same thing tomorrow. People, unfortunately, are a little more variable than that. What job aids tend to bring to the job place is reduced variability in performance. If everybody follows the job aid, everybody does it the same way. If you do it the same way, you're going to get the same results assuming the inputs are the same.

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There are several types of job aids. You know most of them I'm sure. Cookbooks, I don't mean cookbooks like Betty Crocker, but any job aid that's designed like a Betty Crocker cookbook. It's a series of steps one after another. Step one do this, step two do this, step three. And that's its chief characteristic, you walk through it in sequential order just like a recipe.

Checklists. Checklists are used in much the same kind of situation, except the order is not necessarily defined. Checklists are good for those steps where it might say gather the following materials before you start this task and then put a box by each one. So . . .checkbox, they put numbers in there and say you must do it in this order.

Worksheets. A worksheet is data gathering, and I'm sure you're familiar with this. You use them a lot in your own work, anytime that you have to write something down, record things, usually used for data gathering. A good example is your 1040 form. The numbers you fill in are a combination of cookbooks, instructions, and worksheets.

Decision tables. Decision tables are the key to dealing with complex cognitive behavior, and algorithms, simplified flow charts. When your decision tables get too big and bulky, the more difficult they are to use.

At some point you have to say I'm going to use a flow chart. If you take that route, a lot of good software programs will help you do it, but don't get enamored with all the different forms, and don't feel compelled to use them.

Once upon a time, when IBM developed this whole flow chart concept, they felt it was important to establish that diamonds connote where you make a decision. Users won't know this is a decision if there's not a diamond. If there's one arrow coming in and three arrows going out, each labeled with a different condition, that's pretty obviously a decision point, so just stick with plain boxes. It's less frightening to people who are not used to using flow charts. What frightens most people with flow charts are all those symbols they don't understand. They think, "maybe it's important and I don't know what it means." So they freeze in their performance. They'd just rather not use it. And if the behavior you're job-aiding is a combination of behaviors, sequences and decisions, and you write down some things, you'd use a combination of these types in that job aid as appropriate. We'll talk more about how to select the format, which format is appropriate for which, this afternoon.

It's not a matter of personal preference. The behavior drives that decision. Behavior in job aiding drives that decision. That's a job aid that basically has three steps in sequence but with a big decision in the middle. That's a decision table in the middle of this cookbook.

This is the first job aid I ever developed, in 1980, I think. I have a story to share with you about it. This was in response to an automation company. They made automation computers. And they had this big, big fat course that they trained customers on. That course told everybody everything there was to know about the computers. Everything. More than you'd want to know unless you were a geek, in which case it might not be enough. The interesting thing was, this company had charismatic instructors. So the smile sheets at the end were always glowing. Wonderful course! A week long. It needs to be two weeks.

Why? Because there's so much information I couldn't cope with all of it in one week. You need to spread it out. And what really scared this company was that every year, their computers got more and more complex, which meant the courses were getting fatter and fatter and they were fearful they were going to have to extend them to two weeks. They said, "Customers won't buy our computers if they have to take people off the floor for two weeks." They will have to send them to Cleveland, Ohio, pay their expenses, pay their salary while they're not producing, and then have them come back afterwards so thrilled with this course and their pocket full of gifts like screwdrivers and shiny belt buckles with the company logo.

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There's all kinds of ways to get good smile sheets, and then say, well, what did you learn? Oh, I learned a lot. I can tell you anything there is to know about it. Okay, get to work. Well, I haven't figured out how it applies yet. Well, when will you know?

I did the check. Typically, two to three weeks after they got back they began to figure out how what they learned applied to them. The interesting thing is nobody was upset about that. They said, "We so appreciate that training class because it gave us everything we need to know to learn how to do this. Without this I would have never known where to start." Why? Because their manuals were even worse than the training.

So what did I do? I split the course. They were putting engineers who designed and programmed these things, wrote programs for them, and the maintenance electricians who installed and troubleshot all in the same course. Hey! The more they know, the better they'll be. There are some indicators that say it doesn't work that way.

I know that's kind of shocking for everybody because everybody here is pretty well educated and we're pretty proud of that. And here's this guy up here from Ohio, for God's sake of all places, and he's telling us that the more you know can in some cases degrade performance? Absolutely. Who would you rather have fly your plane the next time you go to Africa? A pilot who has been through a course that teaches directly what to do when a certain alarm goes off at the airport? Or somebody who says 'oh, I'm an aeronautical engineer, got my Ph.D., I designed this really neat plane. I should know what this means.' 'All right, that's the stall one. Now what happens? Well, I know stall is when the angle of the tack . . .' Well, by the time they put everything they know together to figure it out, it's too late. Too much learning gets in the way of good performance sometimes. Not in every case, but sometimes.

Now if you're a pathfinder, if you're somebody on the cutting edge of something where nobody has done it before, nobody's gone before you, then that education is important and like the pioneers that first crossed America, you have to cut away all the brambles and make that path. Like Lewis and Clark, you had to go up through tens of tributaries that lead nowhere until you found the one that led to where you wanted to go. Took them forever to make that first trip across. What did they do for the ones that followed? Did they say, well, I had to find my own way, so you're going to have to find yours. I'm not telling. Or did they say, "Hey, you know, there's a path, there's a place through this mountain if you just go twenty-five miles south. You don't have to climb it. You can just walk right through this mountain."

Well, those people headed out there a little quicker because they didn't have to learn by trial and error. Some people are good at that, most people are not. Some people are good at book learning and converting it to practical things. I suspect most of you here are in that very narrow end of the bell curve, but most people are not. Very difficult for most people to figure out how to apply what they learn. How to weed out the wheat from the chaff, what's important, what isn't, what do I have to remember, what do I have to throw away.

So what I'm saying is, what did Lewis and Clark do that helped the followers? What did they create? Which is called a job aid. They created job aids. Job aids aren't new. This is nothing new. They'd draw a map. A map is a job aid that shows somebody how to do a job. . . my task is to get across this country. Give me my map. Does that make sense?

Let me tell you a little about this. I created this job aid. I split the maintenance people and the engineers out. First of all, the engineers would just intimidate the maintenance people. They just sat there and didn't say a thing because they didn't want to show anybody how stupid they were. They're not stupid. They just didn't talk the same language. But they'd been told all their lives, you know, that they're stupid because they didn't go to college, and all that. It's sad. We carried them out.

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Then we said, “What does a maintenance person do when they troubleshoot a computer?” They can't troubleshoot computers. All they know how to do is pull a wire. Well guess what? I went out to this company, I said, “Have you got a good maintenance person who does this really well? If you could clone this person and replace everybody else with them, who would that be?” I went up and watched what this guy did, asked questions, probed. What if this instead of that? So I was having a hard time getting acceptance. So we set up a trial. Okay, technical instructors, we want you to test this next class of customers that comes through. Well, we can't test customers. Well, look at it this way. They're not really your customers. They're the employees of your customers. It's okay to fail them. We just don't tell anybody.

So we had them create simulated realistic real-world kind of problems. Cut the leads here, break modules there, whatever. Twelve of us in a room, and we sent the whole class of electricians through the traditional course and then we turned them loose on Friday and said, we've got twelve simulators sitting around here, computer problem simulators, we want you to get them to work.

I think two out of this large class were successful. Most with some coaching figured it out. Some got so frustrated they were ready to go home. There was a wide variation in their work. Why? In spite of what they learned some of them just walked out and said, “well I'll shake it.”

I swear. I said okay, now tomorrow is Saturday. I'm going to bring my nine-year old daughter up here who's never had any training. We brought her up, nine years old, no training. I stayed very close to her and told her don't touch anything without telling me first, because I didn't want her to electrocute herself. I gave her this and I said here's the first one. Find the problems. Twelve of these things, and she had found every one except one inside of an hour without any help or any coaching. The one she couldn't find, I followed up on. I called Bill and said “my daughter had trouble, I can't figure out why.” He had us walk through it together. Turned out I had made a mistake on the job aid. Had I not made the mistake on the job aid she'd have gotten all twelve. Is she brilliant? No. She could read at the level that's on the job aid.

The first inclination was to fly over in a helicopter and just sprinkle these job aids all over, but nobody would use them. We ended up creating a one-day course to replace that week-long course. That course was focused on simulated problems in using the job aid until they became confident. And once we got them, the stimulus response kicked in. Any guys with a broken processor reached for my job aid. We did that in a day.

After that, this thing that cost three dollars —and there were ten thousand produced in 1980—they sold for twenty-five dollars each and they made a half a million dollars. The computer is obsolete because they didn't try it on one that was still in production just in case it didn't work. They still made half a million dollars.

I taught a job aids class and there was a lady who was a trainer in a big glass firm, I can't remember its name, and she had to write a training course on how to operate this furnace. Before she left the two-day class, this is what she had in her hand. She called me later and she said, “You know, I took these job aids back that you had in this course and I just put them in protector sheets and I hung them at the furnace.”

They don't need training. We just show them how to use the job aids, but all done by hand. If you're reasonably neat and legible, you don't need to go to the expense of \$2,000 training and \$500 software. You use a penny piece of paper and a little bit of lead. I'm going to save this one til later.

The advantages of job aids: job aids make it easier for performers to perform at a competent level. I think this is probably where it's necessary to point out when you are developing your job aid— and this is probably not going to fly well because I'm about to step on a really strongly cherished tradition in the business— you don't do job aids through focus groups. You don't do job aids through consensus building. What happens when you do it that way? You are mixing the way the expert does it with the way somebody who has no idea what they're

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doing does it. Oh, but if they participate they'll use it. So you have everybody's opinion in there and you've just come up with a process that you think everybody's going to use.

But guess what? It's not the best process. It's a compromise. What you'll end up doing, if you can get people to use it, is you'll get them to work to an average standard. You don't ever want average to be your standard performance. If you've got a star performer out there, that's your standard. If one person can do it, and I don't mean by being a workaholic who has no life, no family, but somebody who can do it in a regular work day. You find out what they do, how they do it, capture that and share it with the other workers and you now have a very high standard. And guess what? The other job aid, even as in this last one, let's not even worry about the expert, let's do this consensus one. When people see that it doesn't do quality work, they won't use it even though they participated in it because we all want to do quality work.

How many here are in a position where they hire employees? If you're in a position to hire employees, have you ever had anybody sit across you in an interview and said I strive for mediocrity? No. What would happen? If they're fresh out of college they can't see any reason why they can't be vice president. I'm good and I want to be good and I want to help you be good. If you got somebody from another job, they may be escaping a job they don't like or they may see opportunities in your new job. They're going to come to you saying "This is a chance for me to wipe the slate clean and start over and do really good work." You know what? You're sitting there telling them about the wonderful things they can do. What happens to them six months later when they turn cynical? You've put all the obstacles in the world in their way. Maybe not you personally, but the system is broken.

Gary Rumber says, if you put a good worker in a bad system, the bad system is going to win every time. People get cynical, they quit trying, because they just get beat up every time they do it. Why try if I get punished? Why try if nobody cares? What happens when nobody pays attention to what you do? That behavior extinguishes. The moral is, model your best performer and people will be eager to do it.

I don't have it listed, but one of the side benefits that comes out of a well-designed job aid based on a star performer is that you take the average worker and you make them capable of being star performers, too. Guess what happens to their self-esteem? Guess what happens to their feeling of pride and self-worth? It skyrockets. They don't need an alarm to get up anymore every morning now because they can't wait to get to work and look good again.

It's amazing. But that's not the intent of job aids. I never want anybody to say well we need job aids because morale is low. Improved morale is one of the things that come along with it, but that's never the reason you do it. Job aids are more reliable than memory, so you're automatically going to reduce errors.

In preparation, just to familiarize myself with your industry a little bit, I browsed through a book called *Human Errors in Medicine*. I'll never go into a hospital again. Scariest thing I ever read. Unbelievable.

We have got so many opportunities out here to improve health care. Those statistics you saw earlier, the variability in performance? It's all over the place. Eighty different ways? I bet you the output isn't the same in each case. Job aids reduce costs. What are the advantages? You notice I say you get shorter training time? In my opinion, job aids should never completely replace training. If you took a job aid and completely replaced training with it, eliminated training, you're doing the equivalent of what Jim said, flying over with a helicopter and dropping it and hoping for the best. At the least, the job aid ought to be introduced to the worker by the manager or supervisor of that worker who says, here is the new way I want you to do the job.

Oh, by the way, Rule One is you'll always use this job aid every time you do this task. That's my expectation of you. Clearly said? Here's what's in it for you if you do. I'll be so proud. I'll tell you what, if the next three times I walk through I find you using this job aid, there's a reward in it for you. Really? And then so

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you expect, you inspect, and then you provide the appropriate consequences. Rewards if it's used, other things if it's not used.

Then even more importantly as a manager you model the performance you want. The supervisor. Let your employees see you using your job aids. I've been at this almost 20 years, maybe more than that now. You'd think after 20 years I'd have this memorized. Well, I pretty much do, but not well enough that I can depend on doing it flawlessly. I never go anywhere without my own personal set of job aids to guide my behavior, and I use them in front of my clients.

When I'm interviewing, one of the things I've found is when I lift this up and I started asking questions on this, my subject matter expert will reach over and say let me see that. And they'll take it from me and they'll start doing it on their own. Well, I don't necessarily want them to do that. What I've discovered is if I have two pads of paper, the night before I write down those questions on my blank pad of paper and then write their responses on the other pad where I've numbered, all of a sudden two things happen.

The first time I ever tried this, they took one look at that notebook and said wow, did you put a lot of work into getting ready for this meeting. They automatically felt obligated to work as hard to help. It was a whole change in attitude. I couldn't believe it. That wasn't intended, but that's what happened. The second thing that happened that I liked was they quit grabbing for it, because written in my own hand it's now my personal property, and so I don't think I've had anybody yet that's so uncouth as to want to grab my personal property.

Think about this. A job aid enables novice performers, novices, beginners, to achieve the same results as experienced performers. Think about the implications there. Think about the implications there. I think for that example, knowledge behaviors; think about that job aid that my daughter demonstrated.

I've got another one I'm going to show people later on that had an incredible financial impact on the company because of that. Huge financial impact. And I've got a couple pages from that one. Okay? Things you need to be aware of when you're considering job aids. Job aids, can slow performance, but not necessarily always. So if speed is an issue, you have to consider, will this job aid slow this performance down to an unacceptable level?

What is more important, speed or accuracy? The real issue is not so much how fast it takes to do the steps. The real issue is that a job aid tells you when. There are signals, sometimes subtle, but there are signals for every task you have to do. Part of our responsibility is to teach or to show what those signals are. If it's a situation where the performer has to respond immediately, seconds count, they don't have time to fumble around looking for the job aid, the right page, again the example of the airplane. Jet going down the runway at a 120 miles an hour, they're getting ready to lift off, they're running out of runway, it's time to lift off, they roll out. The alarms start going off again. Is that the time to turn to the co-pilot and say "reach over there and grab my job aid. I need to know what..." It's too late. Certain things have to be trained to recall. Immediate response. I don't think, I react. Job aids are inappropriate when you could kill somebody if you tried to use them in those cases. Job aids cannot solve all problems. I'll get into the logic later on how to decide when it is and when it isn't important. Job aids cannot or should not be used in some situations.

There are some cases where physical constraints will make it difficult to use a job aid. A telephone line repairman can't be hanging at the top of the pole working on the wires and have the manual there with him. Not really conducive to keeping your safety numbers where they belong. Psychosocial barriers are going to be a big issue for you. Doctors, nurses, and paraprofessionals do not like sitting in front of patients and having the patients watch them follow a job aid. They've got a really strong feeling that that destroys their credibility in front of the patient, and up until last year I agreed with that.

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Happened to talk to a whole lot of patients going out of a healthcare facility. Would job aids bother you? How much would they bother you? I guess as long as we get you what you want to hear. Just let them think you assume it's going to bother them. How much would it bother you if your doctor or your nurse or your clinician figured out what to do about your child following a manual? "Well, I'd prefer it." Why? "If they really don't know what they're doing, I'd rather they figure it out." The book is right. I've got faith in the book. I'm not too sure I have faith in my local practice . . . I was astonished by that. And it wasn't one or two. The exception was the other way around. I was blown away by that. Well, that's not going to make a lot of difference to the health care workers because the health care workers are operating out of their perceptions.

Using job aids has such incredible benefit, this consistency of performance at a high level is so important that you ought to look very closely at any of these situations you run into. Now's the time to get your focus group together and say, here's the problem: "People are embarrassed to use this." How can we find a way to eliminate this embarrassment? How can we hide it and still make it useful? What's the big "sales presentation?" I know it's not medicine, but the concept is there, where the sales person sits opposite the prospect and goes through the presentation.

Nice pictures here, drove home the point, talked about these pictures. There was an enormous presentation and customers frequently have lots of incredibly difficult questions. Guess what? They didn't like using the book. My thought was to give them a job aid to work with. Didn't do it. What we ended up doing was putting a dark green band across the bottom and upside down in black ink on top of the dark green was the script. Here, they're showing people this, all this pretty color draws the attention and nobody ever noticed, you know, none of the prospects ever noticed the script at the bottom. They just thought it was a green line. How weird. But they focused on this. The salesperson could look at this. It looked to the prospect like they were looking at the picture too. They were reading the script and what to do next. They'd just turn it and read the next one. Oh, tough question, guess what? We put a thumb tab back here. If you drop your thumb in the thumb tab, it opens it up and right away now there's an upside down page that says if the question is this, turn to this page, if the question is this, turn to this page. Just flip over to that and I'm glad you asked because . . . the prospects were blown away. Look, said the audiences, you're so smart. They didn't have the answers. They had a good job aid.

Job aids require updating. That other job aid I told you about that had such a significant impact, it required updating. This involved very complex systems. Dealt with high technology constantly changing. This was a huge job aid. Seven hundred pages. Job aids aren't always little stick-on things or one page. Seven hundred pages, but it fit every characteristic of what a job aid was. Because it was changing so much, they had to hire a full-time technical writer, get her trained in job aids, and her only job was to keep that job aid current, between the changes in the technology and mistakes I put in there that they'd find.

Is this required updating really important? It's a nuisance, but as the situation changes don't people need to be updated too? Doesn't training need to be updated? This is a cyclical effect. Changing a job aid is not easy, but it's easier than retraining a person who's been trained to do something habitually. You have to break that habit, and replace it with a new one in a very similar situation. Difficult, difficult to do. But if they've never committed it to memory, you change this and their behavior changes immediately. When they go to the step that changed, they just do what the step tells them. So it's better than changing training, changing memorized work. They may have to make the need for training the task, but something I heard earlier this morning leads me to believe that a lot of the training in this industry probably could be changed as well.

I would propose to you, and this is heresy, I know— take a real strong look at the way your training is. Does it talk about the subject matter? Does it talk about the disease? Does it talk about the medicine? Or does it tell people what to do very clearly, straightforward, when to do it, how to deal with the unusual situations, and give them lots of practice, throughout the course, not on a live patient, but throughout the course on how to do it. If it doesn't do that, you're not training, you're telling, and telling isn't teaching. It isn't training. It's the model

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we've grown up with from K through 16. That's why it's so tough for us to change, because everything we've been trained with has been based on that model.

I would propose that you create a job aid, whether you're going to use it as a job aid or not, hold off on what you're going to title it, and then give your training based around that job aid. Let me show you a few steps and then I'll show you a few more. These are results in the private sector. This I love, a highly-qualified workforce refused to relocate from San Jose to Dallas when their employer and Internet service provider consolidated its three Internet control centers. They had one in Mobile, one in San Jose, and one in Dallas and they decided to relocate it all to Dallas. The Mobile people moved to Dallas, no problem.

The people in San Jose . . . I wasn't necessarily slamming Mobile, but the people in San Jose said wait a minute, San Jose has sun and surf and lots of high tech jobs I can step into tomorrow. Dallas only has sun. I'm not going. And all thirty-five employees and their manager refused to go.

The problem was the center in Dulles was already built. They'd spent incredible amounts of money on this new center. And every single person says they're not going. Sorry! See you later. Management said "that's all right. Just stay here until we can find replacements." They started advertising for the qualifications, same qualifications, in the Dallas newspaper. Big telecommunications area, they thought they'd have no problem at all.

Six months, not one response. Not one. They were looking for four-year double- degrees with ten years of experience on multiple networks, because their network was tying to business customers. It was providers to businesses and they had no control over what networks their customers had. If there was a network problem anywhere in the system, that customer called up and said I've got a problem, it's not working, it's your fault. They had to be able to troubleshoot on their own equipment and for what the customer had to have at their end to rule that possibility out. We did a quick calculation and said there are 600 significantly different pieces of equipment they'd have to troubleshoot. That's the 700-page job aid. Actually it was a set of job aids that went anywhere from 4 to maybe 20 or 30 pages. There were about 450 of them. No response. So that's when they called us.

We went in: we said "just advertise; don't put the qualifications on it. Take anybody who comes." We sent it out, we went out to San Jose, spent a couple of months out there, very complex job. Their training was on the job, unstructured. They'd hire these four-year, ten-year guys - four-years degree, ten years experience and they'd say, 'you'll follow Joe around and at the end of your year we'll see if you're up to speed. If not, you're gone.'

So in one year they gave them a chance to get up to average. Average stunk. It was a terrible number. This network controlled Wall Street. If the network goes down, there's no stock trading going on as long as it's down. You don't think the President of that company wasn't in that control center five minutes after he found out it was down?

We ended up with 10, not 35, two-year degree electronic technicians with no experience, fresh out of school, and a 700-page job aid. We gave them four hours of formal training on how to use the job aid and some of the terms that they'd be using 40, 50 times a day. I'd tell them how to memorize it. We had 30 people from San Jose come down for a month to babysit them. After a week they sent them back. Not only were these guys out of the shoot as good as the others, they were better. They reduced average down time to a third of what it was with a lot more highly qualified people.

Intervention. We developed a job aid, captured the expertise. Now this work is performed better at a seventy-five percent lower cost; they reduced the network by one third. Seventy-five percent is the difference in salary, by the way. They didn't have to pay them \$125,000. They didn't have to give them stock. I think the salary was \$30,000 a year. These guys were thrilled. Mom, guess what I'm making? Everybody was happy.

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Results in the military sector. Job aids really had their formal induction with the military. Did a lot of research in the 1950s. That's how long it's been around. They kept it a huge secret for some reason. This is particularly true with the Army. They were modernizing the Army. They were going from the old mechanized way to the electronic way, so there was a huge jump in complexity of jobs practically overnight.

At the same time the quality of their recruits was plummeting. And because of all this complexity and the recruit level, the training was expanding and the length of training was expanding at an exponential rate. They said you know, if we keep this up, they'll be in training from the day we enlist them til the day they get out four years later. There's no return in that for us. So they had to find a better way to do it.

Guess what they did? They asked me to help them out.

Intervention. Change training to put more emphasis on performance with job aids. Now this was a result of a 14-year study with 22 complex systems and 100 or 200 job aids. Tasks were completed in one-third the time with one-fifth the errors—these are complex tasks by the way. They are troubleshooting complex computers. In this particular case, there were novices armed with a job aid, and experts armed with the old user manual. Astonishing numbers. But again, in the Army, you know how that hierarchy works, change comes painfully slow. It took 14 years before the Army said, maybe there's something to this and they took my path, and said we are going to change all of our personnel, but not just these test cases. We're going to do all of it this way.

(For additional information on this presentation, please review the Power Point File of this Presentation in its entirety)