

The eLearning Coach Podcast, Episode 45
The Art and Science of Practice and Feedback
with Patti Shank, PhD

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Connie Malamed: Welcome to the eLearning Coach podcast online at thelearningcoach.com. I'm Connie Malamed, bringing you ideas and tips for success with creating online and mobile learning experiences.

Hello, learning people. It's so good to be with you again. In this episode, we'll be exploring what the research says about practice and feedback. What are the most effective types of feedback? Should it vary by audience characteristics? And so on. I'll be speaking with Patti Shank PhD about research-based methods for providing effective practice and feedback. Patti has more than 20 years of experience with performance and learning analysis, instructional design, learning sciences, information design, and usability principles. She is deeply engaged in researching what works best for workplace learning and training outcomes. Patti is the author of several books including most recently, *Practice and Feedback for Deeper Learning* and *Write and Organize for Deeper Learning*. You can find the show notes with links to resources and a transcript at thelearningcoach.com/podcasts/45/.

Here's the interview.

Hi, Patti. Welcome to the eLearning Coach podcast.

Patti Shank: I'm really glad to be here, Connie.

Connie Malamed: Patti, you have a new book called [Practice and Feedback for Deeper Learning](#). And since you take the perspective of deep learning, can you explain the difference between deep learning and surface learning?

Patti Shank: Yeah, I can. A lot of people use that to mean whatever they want. But in the research literature, what it means is teaching and building instruction to help people actually apply what they're learning as opposed to surface

learning, which is learning that is for an immediate need like to pass a test.

Connie Malamed: Like we all did in college cramming.

Patti Shank: Exactly. Exactly. And a lot of what we're designing today is still for surface learning just to pass some tests at the end of a unit. But in training, that's inadequate.

Connie Malamed: Exactly. A lot of times, people are developing courses for compliance purposes that employees are forced to take.

Patti Shank: Right. And I have a whole different philosophy on that, that we can talk about another day. But when you're teaching people job skills, it has to be done for deep learning. And there's a whole bunch of research about how that's done. And the basics include just increasing amount of cognitive effort that people are going through to learn what you're learning. And you're not increasing it to make it hard, you're increasing it to make it relevant and applicable.

Connie Malamed: Nice. Let me ask you this. Why did you choose to focus on practice and feedback?

Patti Shank: Well, I started over a year ago looking at what helps people learn skills for the job that are applicable. And I started picking topics that were issues that were problems that I see every day in training content. And the first book was writing for learning. And the second one was on practice. And the writing one was because there's so many writing problems in instruction, especially in training, and the second one was on practice because we just simply don't include any sometimes or enough most of the time.

Connie Malamed: Right. So, I'm guessing that you're going to tell us that when we do give people practice and when we do give them feedback, that we shouldn't be saying, "Good job." But that's not really a good idea.

Patti Shank: Yeah, it's not enough. So, I wrote Practice and Feedback for a number of reasons. One is too much instruction just has content. And this is one of

my new things. It's like if you just want to develop content, then you're a content developer. You're not an instructional designer or an instructional developer or builder of instruction. Instruction implies that people learn something that they can use. So, the reason for Practice and Feedback is one, they go together. And two, that without adequate practice and feedback, we really don't have instruction. And there's a good chance the time is wasted because they didn't learn anything, can't use it.

Connie Malamed: What is it about our cognitive architecture that we require a lot of practice for learning a skill or for really retaining knowledge?

Patti Shank: That's so fascinating. And I think the easy answer to that is that working memory is very limited. And we use working memory heavily while learning, both in trying to remember what we're learning and people understand that. But what they don't understand is that while learning, people have to compare what they are learning to what they know in order to situate what they're learning in their minds. That's a very heavy, heavy use. And we can only do very heavy use of mental processes and we can only do a little bit at a time. And because learning tends to be sequential, we've got a lot of constraints going on there.

We've got working memory, which can only handle a little bit at a time. And we've got the sequential nature of understanding and knowledge. And without all of those things happening, we don't learn. So, it just takes time. We can't learn fast because of those constraints. And we can't learn everything because of those constraints. We must learn things in sequence.

Connie Malamed: Right. Now, I'd like to focus on a few types of practice that promote learning transfer that you write about in your book. So first, you talk about fidelity. Can you explain what that is?

Patti Shank: Fidelity is how close the practice situation matches how it's going to be used in the real world. And there's two things to know about that. One is you might think you need all kinds of fidelity, but you don't. And so, I discuss how to figure out what types of fidelity are good and what types of fidelity are just going to cause cognitive load. For example, if you're

doing practice on human interaction skills, if you added in how the office looks and what the other person looks like, those are not necessary. They don't help. And so, because this is a cognitive and emotional fidelity issue, so you have to actually figure out what is it that people are doing during that skill. And if you add in other kinds of fidelity or reality, then you're muddying the waters and making it harder for someone to practice.

Now, we leave out types of fidelity that are really important. For example, social interactions are left out all the time. The nature of social interactions, the stress that might be involved if it's your boss, those sorts of things. A lot of times, we leave out stressors. So, for example, I was training a group on Wall Street and they work with Wall Street traders and they realized they needed to add noise and confusion because those people work in noise and confusion.

Connie Malamed: Interesting. Interesting.

Patti Shank: Yeah, so not all types of fidelity are needed, or realism are needed. It's just the types that are most coherent and with the type of things people are doing. So social interactions would be the nature of the social interaction, perhaps the situational stuff. But how something looks is rarely important unless we're training people to deal with something that is visual. Like how to deal with a copier that's stuck and has jammed paper in it or something like that. That's a visual fidelity issue. But other things don't require visual fidelity.

Connie Malamed: Right. So, fidelity is one aspect of practice that promotes learning transfer.

Patti Shank: It does.

Connie Malamed: Can you talk about consequences? That's another type of practice that promotes learning transfer.

Patti Shank: Right. So, consequences, and this has to do with feedback also, with what are the natural consequences of an action. And it's helpful if people can experience natural consequences when they don't do it right. That's one

of the great things about e-learning is it's a safe environment to do things wrong. But we often tend to build instruction that only shows the right way and doesn't allow people to do things wrong. So natural consequences and then how to deal with those consequences, build that into the training.

Connie Malamed: Right. Right. Now, one aspect that I don't think necessarily is very well-known is variability. Can you talk about how practice variability helps to promote learning?

Patti Shank: Yes, and also huge impact on transfer. A lot of times, we train people one way to do things. We train people one situation, one problem, and transfers enhance when people have the chance to practice through the wide variability, the variance in situations, the variance in problems. And so that's why I said earlier on, we don't do enough. And so, we have to add more variability in. So, adding multiple types of common situations. And depending on the type of people you're training, you may have some uncommon situations, but happen regularly enough that if they don't handle them right, there's going to be severe consequences.

Connie Malamed: Right. So, let's say somebody is doing customer service training. Rather than showing them how to deal with one irate customer, probably having them practice dealing with different types of problems would work.

Patti Shank: Right. Different kinds of customers. You have people who are irate out loud and then you have people who are irate, and they barely say anything. And those are both people who are not going to buy from you again. So, what are the skills needed to be able to handle the variation in this problem?

Connie Malamed: How can people use social interaction, which you say the research shows promotes learning transfer, and I guess we all kind of know that, how can people use social interaction when they're doing an e-learning course or any type of solitary learning that's self-paced?

Patti Shank: Well, what the research showed is that a lot of tasks have social interaction components. So, one, we have to add that into the variability. We have to add that into the tasks. And so, let's say I'm handling

something and I give it to someone else. That's a handoff. A lot of times, we leave the handoffs. We leave the asking questions. We leave the pieces of the work that are social in nature out of the training and that's another variability issue. Put it in the training. If it's important to your outcome of those tasks you are teaching, then add that into the practice.

Connie Malamed: Right. That makes sense. So, for example, somebody is doing customer service and they're in the middle of a problem and they can't solve it. So perhaps they ask someone next to them or they ask their manager what to do. And the manager is grumpy. Sorry everyone who's out there being a manager. That would be an example of a type of practice that would take social interaction into it.

Patti Shank: Right.

Connie Malamed: It would simulate a social interaction.

Patti Shank: Right. Or let's say the person next to you gives you an answer that you think is wrong. All the things that happen in real life must be part of the practice. I can hear someone thinking, "I don't have time to spend 14 hours on everything that can go wrong with that interaction." But go around and talk to the people who are actually doing that task and ask them what gets in the way. What causes problems? Who else deals with this? Just know enough about the job so that you can include in the training what's needed to be successful in real life. Because otherwise it doesn't transfer. And it's not relevant.

Connie Malamed: Right. And that's also a vote for spaced learning. So that you don't want to sit there and have people do eight different scenarios in one sitting, but they can get it throughout the month or two, one or two. And then you've got that spaced practice.

Patti Shank: Right. I think that there's a lot of things we can do to make learning far more impactful and more importantly, the one thing I'm always looking at is the things that improve training outcomes. And I'm kind of keyed into the people who write about training outcomes now. That took me a long time to find all those folks because that's what we're trying to do.

Connie Malamed: Right. Patti, can you talk about just a couple different types of practice that can help a person retain the knowledge and skills that they've learned?

Patti Shank: Right. That's a good question. And I actually divided practice for transfer and practice for remembering. And one of the ways to practice for remembering is the same as practice for transfer. And that's to use the realistic context of the job. And so that those things will prime them. Oh, here's a good example from a client that was training people how to do in training using one monitor. But in real life, they use two monitors. And so, they had some problems with retention and it was like you need to use the same setup so that it primes people to remember what to do with each monitor and where to put things. That anything you do in training, just like it's done on the job, you should use the same tools, the same references because those things will prime them when they see them on the job. "Oh, I'm supposed to do this now."

Our memories are really context sensitive. It's the reason why we remember where we were when we heard a song. So, we want to use the context of work in the training. And I know you know this. Most people don't. And it makes it much harder to transfer ... The remembering and the transfer are tied together. You have to have the right context or people don't remember.

Connie Malamed: And one more little strategy or tactic that people can use in practice to help the learners remember the knowledge and skills.

Patti Shank: Yeah, one of the best ones is have them remember during training the same way they need to remember on the job. So, let's say these four problems, you're going to do X. And these four problems, you're going to do Y. Do those problems with X in the training, do those problems with Y in the training. So, if you're going to use a certain reference, knowledge base or whatever to answer certain types of problems, use that knowledge base during the training. And if the only way to get help is social interaction, then teach how to make those social interactions work. Yeah, so again, it gets back to making sure that the training is like the job.

Connie Malamed: Is realistic. Yeah. Why don't we move onto feedback?

Patti Shank: Okay.

Connie Malamed: Now, you say that your book is mostly about formative feedback. Can you differentiate between formative and summative in terms of the learner?

Patti Shank: Yes, formative feedback is when you're giving feedback to help someone improve what they're doing. Summative feedback is just final feedback. And it can help people do, but you really need to use the formative beforehand to get them to the end. So formative feedback, and this is something that was very interesting while I was reading the research, that formative feedback, the type that helps people know what to do next is the type you want to use during practice.

Connie Malamed: And what's an example then of the summative?

Patti Shank: Summative would be, here's how many you got right, here's how many you got wrong. And here's a way to study the things that you got wrong and do better. But it's not as concerned with helping people make the next step better than what they just did.

Connie Malamed: It's more like the kind of feedback you get in school when you go, "Here's an 89. Here's what you got wrong. See you later."

Patti Shank: Right. Yes. And now we're moving onto the next topic.

Connie Malamed: Right.

Patti Shank: Which by the way is how most people design training feedback. And that leaves a huge gap in support that is really, really necessary.

Connie Malamed: I agree. There's some types of feedback that can actually hurt learning and you write about those. Can you talk about that a little bit?

Patti Shank: Yeah. Some of that kind of feedback surprised me. And one is, don't bring up any personal issues. Like, "You're not good at this," or, "I know this isn't your forte," or something like that. Anything that personally makes someone feel bad about themselves. Not helpful can be very harmful. And this one surprised me. We shouldn't give people approval for getting it right. That's what they're supposed to be doing. It's fine to say, "Good."

Here's what you did right." But, "Wow. You really did a great job," is not helpful. It doesn't help people move to the next level.

Connie Malamed: Does the research show that too much praise can hurt learning?

Patti Shank: What I read was just that praise doesn't belong in formative feedback. It's just a matter of what you did right, what you did wrong, and how to improve on your next step.

Connie Malamed: So, you write that the research shows that the feedback that we give people may need to differ when someone is a novice versus when someone has mastery or at least some level of confidence. Can you talk about the difference in the type of feedback that you would give in these situations or to these different audience groups?

Patti Shank: Yes, it's really interesting that they're so different. And there is some discussion about how much difference there should be. But in general, when someone is new to a topic, they can't handle tons of feedback. Informative feedback, we say that we're helping people over their next step. So, with someone who is newer to the topic, they need to know very targeted what they need to do next or what was problematic and how to fix it. Whereas, people with more skill don't need that and it can be problematic if they're not given time to solve things. So, part of training is understanding how to fix problems. And the more expertise you have, the more skill you have at that.

So, one of the things I got from the research I did was that people with more knowledge should be given time if possible to figure out what's wrong or maybe hints. Like in the middle is hints. Towards the far end of someone not knowing anything, they need enough feedback just to move forward. In the middle, you can give them hints. And at the far end where people know a lot, you can ask them to think out loud about what it is they did wrong and maybe what they should be doing next.

So, it's just a matter of how quickly and how much. The main takeaway here is that we don't want to overburden or overload someone who is brand new.

Connie Malamed: Right. That's really good information because I think we may not use hints enough. But hints are great when somebody is kind of at mid-level.

Patti Shank: Yep. And they can figure it out on their own. And by the way, the figuring it out on your own is a retrieval practice exercise, which means they'll remember it better.

Connie Malamed: And one last question, Patti, before I take up your entire day. What does the research say about the best time to give feedback as it relates to practice? Is it immediately after practice? Is it a little bit later? Should you wait until all of it is done? Or should it be part way?

Patti Shank: No, it should be immediate. Well, here's what it says. It says, "Give feedback when it can be used to fix what's wrong." And to me, that was like a flashing light of brilliance because the purpose of formative feedback is to help people improve. So, if you give feedback and they can't do anything with it, they're going to forget it. So, it's also a remembering issue. It's also a transfer issue. So, let them use it. And so, give feedback when they can use it.

But it all goes back to your last question. And that is for people who are newer, give it immediately so that they can use it. And you don't necessarily need to give it immediately when someone has more experience. You can give hints and let them struggle a little bit.

Connie Malamed: At each level, it kind of goes back to what you were saying at the beginning, at each level, we're promoting the use of cognitive effort because cognitive effort is going to be what helps people learn.

Patti Shank: And make it deeper and for use it later on. And that's the main thing we have to do in instruction and especially for training. We're not training for the test. If you are training for the test, fine. If you don't care whether ... I have a whole thought process about what to do when we don't care, when it's just a check-off. But when we are teaching people how to do something and we want them to remember it, we have to use the things that help them. And the actual effort is really important.

Connie Malamed: Right. Right. Thank you so much, Patti. This has been such an interesting conversation. And congratulations on your book.

Patti Shank: Thank you so much, Connie.

Connie Malamed: I hope you got some great takeaways from Patti to use in your own work. I love the way our field continues to improve and evolve when we base our choices on research-based practices. Again, you can find the show notes and a transcript at thelearningcoach.com/podcasts/45. Thanks for listening. Take care. And I'll talk to you next time.