The eLearning Coach Podcast #3:
Why You Need Scenario-based eLearning
with Ruth Colvin Clark

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Connie Malamed: Welcome to The eLearning Coach Podcast, online at the theelearningcoach.com. I am Connie Malamed, bringing you ideas and tips for success with creating online and mobile learning experiences.

Hello learning people. This is episode 3, Scenario-based eLearning

I think that one of the best ways we can raise the bar in our industry is to learn more about evidence-based learning. That is why we are so pleased to chat with Ruth Colvin Clark, PhD. Ruth has a gift for bridging the gap between academic research and practitioner application, and you can see that in all of her books. Today, we are going to be talking about her latest book, Scenario-based eLearning. Here is the interview.

Connie Malamed: Hi Ruth. It is really good to speak with you. I know you have a new book called Scenario-based eLearning, and I was wondering what inspired you to write a book about eLearning scenarios.

Ruth Colvin Clark: Hi Connie, I really do appreciate the opportunity to talk about the book a little bit. It is interesting that I would say it was all good 10 years ago, maybe 12, that I was at one of these many eLearning conferences that had an award ceremony, so somehow a group of people had reviewed a lot of eLearning and gave top words.

So I was looking at the award winning courses, and I honestly do not even remember the topic, but it really struck me that this is a real different approach because it did start right off with some kind of a situation or problem and then the whole course was about how you actually resolve the problem. So right there, I was very impressed, and I asked the authors I would like to have a sample, which they kindly gave me.

Then in the meantime over the years, more and more of these popped up, and at the same time, in medical education, there has been a lot of problem-based learning which actually emerged in the 1970s, but it has become very widespread in most medical schools and then more and more in the literature. So with seeing a lot of these around and seeing the problem-based learning taking off in the medical field, I thought that this was the right time to put together some guidelines for practitioners on what is scenario-based eLearning and how they might consider designing it.

Connie Malamed: It does seem so timely. I almost cannot create or design an eLearning course now without adding scenarios, it just does not really makes sense, but I know there is a little bit of

confusion, so can you define what a scenario is and if it differs from a case study?

Ruth Colvin Clark: That is really an important question, and when you say there is confusion, I think it is a general statement about our field because one of the real problems we have in training and education is we lack any consistent definitions of our terminology, and so I am talking about scenario based, I named my book Scenario-Based eLearning, but other names that I see out there could be problem-based learning, whole-task learning, case-based learning, immersive learning, I could go on with an entire list.

So one of the things I thought was important in the book was to actually define what do I mean by scenario-based eLearning and what are the core features of it. So when people get the book, on page five, there is a definition and then further description of the definition, but for now, I will just highlight the key parts of the definition. Scenario-based eLearning is preplanned, and I think as training designers and developers, we all understand pre-planning. It is a preplanned, guided, inductive learning.

So I think we have two approaches to learning, one is instructive which is basically we are pretty explicit and lay out the knowledge and skills and the other is inductive, which is more experiential. The learner tries to solve some problems, they get engaged in some things, and then they have to induce more of the content themselves. So it is a preplanned, guided, inductive learning environment, and it is designed to accelerate expertise in which the learner assumes the role of an actor responding to a work-realistic assignment or challenge which in turn responds to reflect the learner's choices.

So basically, the learner right from the beginning becomes an actor, is given a work assignment or faces a challenge or problem, and they have to then draw on the resources in the environment, which should reflect those in the actual workplace, and resolve the problem, complete the assignment, and the idea is in multimedia to actually compress, it is like experience in a box. Compress experience so you can accelerate expertise.

Connie Malamed: Oh nice, I love that metaphor of experience in a box. Can you talk a little bit about the evidence that scenarios do enhance learning, that inductive learning does work?

Ruth Colvin Clark: Right, this is actually an area of some controversy, the tension between instructive and inductive, and with most controversies, I think there is truth on both sides and a lot in the middle as well. I am very interested in evidence-based practice. So in fact in the book, I spent a whole chapter, Chapter Ten, it is called *Does Scenario-based eLearning Work*, where I say some of the research and evidence that we have about it.

It is relatively new in this grand scheme of things, so there is not a huge wealth of research, but a couple of studies just to mention that are of interest, in medical education, I mentioned problem-based learning has been around for a while. There was a single study where medical students had a 3-week rotation in Orthopedics. Typically, in those rotations, as we all know, they go to the clinics, they see the patients, they have small lectures, etc. In the study, one group did that and the other group did that, but they also had 3 online scenario-based cases that they resolved. They did 3 a week, and

then at the end of the week, they met with their faculty adviser to talk about these cases. Well, at the end of the 3 weeks, they tested everybody. Probably, no great surprise that the students that had the case studies in addition to everything else scored higher on their various examinations.

Now, that is just one study. I was happy just literally last week to come across a med analysis that gathered together a lot of studies around what they called virtual patients. Virtual patient is basically a scenario-based eLearning based on the patient's signs and symptoms. They found 12 studies that did an experimental analysis, and they found that overall, they got positive effects from using virtual patients and particularly when those virtual patients were used as an additive, so whatever the regular program is, then these like scenarios were an additional thing. The most impact was on clinical reasoning. There are a number of other studies mentioned in the Chapter 10, but that is at least a couple that we do have that do show the benefits of the scenario-based eLearning.

Connie Malamed: That makes so much sense. I too really believe in evidence based, but until we get there, until we have enough evidence, sometimes I go on just plain logical common sense, and of course, it makes sense that people are going to be better if they are practicing solving problems that they will do in the workplace.

Ruth Colvin Clark: Absolutely, I think it makes sense, and I think all learning, whether you are part task or whole task, should be focused on tasks, but there is a difference in the segmenting and sequencing of how, when, where you are going to actually present that tasks, so it does really make sense.

Connie Malamed: So what type of skills do you think scenario-based eLearning can build?

Ruth Colvin Clark: That was something I gave a lot of thought to, and in the book, I broke out what I call learning domain. So I broke out eight learning domains that I think particularly lend themselves to scenario-based eLearning, and there are probably others, these are the fairly broad. So for example, the arena of interpersonal skills, another one is compliance.

So most organizations have various compliance courses once a year or whatever. Certainly in the old days, these used to be quite boring, either someone came in with a lecture or you read policies and procedures, but putting them actually in the context of a compliance situation and then letting the learner decide what they would do, how they would respond is much more engaging and more motivating way to approach compliance.

Other areas involve problem solving such as diagnosis and repair analysis and etc. All of these may represent situations where on the job, a particular situation does not come up that often, and so by having these kind of built into a box, you can build expertise where it is not so easy or would take a long time on the job to do so.

Connie Malamed: Well, compliance training is *still* boring, and I notice that when I put even just small scenarios in my compliance training, the audience members really appreciate it and like it because then they can relate to it, you know it relates to their job and motivates them.

When someone is starting out, maybe they do not feel very comfortable creating eLearning scenarios. I know, I have had clients tell me "I just can't give you any stories or any scenarios because the audience groups are so different," but what I will do is just write one myself anyway and then let them correct it, so what is the key best practice that instructional designers can use where we can really get better at designing scenarios.

Ruth Colvin Clark: Well, I think your idea is really good. I have used that approach in many instructional situations, whether it is scenario based or whatever. I work with the subject matter experts, and I will say, I am going to write out some examples and some definitions, I start writing, and they say, "Oh! that's wrong." I will say "Oh, it's wrong, so you do it, you help me in that." It gets them going, and they do it.

I think that one of the challenges in scenario-based eLearning, I talked earlier about how it is inductive, if you get very inductive, if you get too close to discovery-based learning, we have a lot of evidence that pure discovery-based learning does not work because the learners floundering around wasting a lot of time. So the key here is to have something that is guided discovery. So we don't want to just throw them in the water and let them hopefully swim and not sink.

Though we need to provide with researchers call scaffolding or guidance to give them some hope of success or help along the way. I have 2 chapters on guidance in the book, different ways you can provide scaffolding, obvious traditional ways you can provide, a tutorial, but other things I have seen creatively done is you have some online agents, avatars, in there, who can be advisers on different aspects of the scenario.

Then obviously, you are going to start with simpler scenarios, and one thing you can do is in the beginning scenario, you could even do it as pretty much of a demonstration, and then the next scenario, you could do part of it and the learner would finish it, and then they can be entirely on their own. So there is just a number of ways that we can provide that scaffolding, so the learner is helped quite a bit in the beginning and then gradually released to solve the problems on their own.

Connie Malamed: I think that is a great best practice because I have always used to think of scaffolding as something that teachers did with students in elementary school, that was the first time I had heard of it in that context, but in workplace learning when people are solving really complex problems, it does seem as though they need some guidance and help, that has been my experience too.

On the other side, just to flip the coin, what is a common mistake that you see instructional designers or learning architects make when it comes to designing scenarios?

Ruth Colvin Clark: It is kind of, as you say, the flip side that they may have scenarios which are lacking guidance, and also it is possible to have too much guidance. So you may have seen some branched scenario types of eLearning, and with each screen, the learner has two or three things to pick, and sometimes, it is very obvious what the correct answer is and you are kind of going along in a linear way, and if the goal is really to build a little bit more analytical creative thinking, that might be overly

guided, so I think probably getting the guidance about right is one of the main challenges in scenario-based eLearning.

Connie Malamed: That is good advice. We are hesitant to make the answers be shades of gray, but that is how it is in the real world, there are benefits and negatives to making a choice, so I think it is good to put in a little shades of gray instead of just having one obvious answer?

Ruth Colvin Clark: Actually, one of the whole domains I have is called tradeoffs in situations where really, as you are saying, there is no solution or right answer. There is a number of alternative choices you could make, and they are all going to have consequences positive and negative. So I made a whole category, it is called tradeoffs, for those extreme situations that are totally gray.

Connie Malamed: What do you think about scenarios being illustrated with corresponding visuals, how important do you think that is or do you know of any research that mentions that?

Ruth Colvin Clark: Yes, it is an area where it would be great to have more research on this. I am currently rewriting my book on evidence-based training, and I will be going through a lot of the research on visuals, and not surprisingly, but we do have some recent research that if you give learners a choice, something that is mostly text and something that has text and pictures, they are going to choose something with the visuals even though some of those visuals are actually not relevant and could even delay learning. The lesson learned is people like to have visuals in there.

I would say a visual interface is crucial when the job itself involves visual discrimination. So an obvious case would be some kind of medical situation where, you know, the sights and sounds of the patient are very important. What you want to create, I think, as much as you can is the context of the workplace. Now, there are some situations, I would say, where the visual context is not that important. Yes, maybe you need a computer screen or something like that and you need some documents, but you do not need a tremendous number of visuals. The 2 research studies I have seen both involved jobs that, I think, do depend on visual discrimination.

One as I mentioned previously was a medical example, and the other one had to do with teacher education and teacher cases and some of the cases were presented in narrative text only, some were presented using a video of an actual teacher demonstrating the techniques, and another one was presented with computer animation, and they found that both the visualizations, videos and the animations, gave much better learning and of course were preferred to the all text narrative examples. In short, I would say learners are going to like something that is visualized better, and when the job context is visual and the decisions rely on visual discrimination, you definitely want to incorporate those visuals.

Connie Malamed: Very good. Can you provide an example of successful use of scenario learning that you have seen?

Ruth Colvin Clark: I was very fortunate in writing the book that I had several colleagues that I have again stumbled across in various conferences and so forth who loaned me some of the scenario-based

eLearning courses and let me present them with, of course, credit to them.

One I will point out is from Raytheon Professional Services, and actually, it starts with figure 1.1 in the book. It is focused around troubleshooting, and the visual is you are in a virtual automotive repair bay, and in that repair bay, you have a car with a symptom, and you have simulations of probably 10 to 15 different diagnostic tools that you can use to identify the source of the problem and then repair it.

There were several things I really liked about this program. One is that the program has actually been tracing all of your steps, all of the different tools you used, and you can compare what you did and how long it took you compared to what an expert did. That gets you some really powerful feedback and some opportunity to reflect and think about, "Well, here it is maybe what I would do differently next time." This is a very good example of a scenario-based eLearning, the way it is designed, and also in troubleshooting, there is going to be certain failures that do not come up that routinely. So to be able to build expertise in those areas in a fairly efficient way online compared to actually on the job, I think it is an excellent example.

Connie Malamed: That is a great example. It made me wonder though, you said there were 15 items, do you think that is too much choice and too much information for a learner to have to go through?

Ruth Colvin Clark: That is an excellent question, and this is where it is going to tie back to your audience. So yes, absolutely as a brand new automotive technician, forget it, you will be completely overwhelmed. This is actually designed for the apprentices, so they have already had all the fundamentals of troubleshooting, and they know how these various things work, so the purpose of this is to give them the opportunity to apply what they have learned to troubleshoot, may be some failures that are not quite so common.

Connie Malamed: I love the idea of comparing it with an expert. I have never seen that, how an expert would respond and the time that it would take. I would really like to use scenario-based questions as assessment items, so can you talk about the pros and cons of using this approach?

Ruth Colvin Clark: I think that is another excellent question, and I did write a whole chapter on the book on evaluating a scenario-based eLearning. First of all, when you are working on the knowledge areas, whether it be concepts or certain principles, I think you can do that with some skillful traditional text writing using multiple choice. However, then if you really want to evaluate performance, then you are going to maybe want to have scenario, and then your challenge is going to be "Okay, how are we going to actually score this scenario."

What was interesting in the automotive example that I described, because I asked them that question, how they evaluate it, they actually used time. Because when you were doing this troubleshooting, there is more than one approach that you could take, so you could not say it always has to be done exactly A, B, C, D. They have in the program virtual time, each tool is associated with what it would normally take, this would half an hour to do, this would take 45 minutes to do, so you have that virtual time, and then you have the actual time that the learner is spending, so if it is like me and I know nothing, I am wasting a lot of time going to a lot of equipment, I am spending a lot of virtual time and

also a lot of actual time, and so I would not score very high.

So they tied the scoring to those 2 time parameters which I thought was interesting. You may have scenarios that I call ill-structured for which we, talked about earlier, there really is no one set solution, and I think in that case, maybe you are going to have to have some human judgment involved if it is a very open-ended product or an ill-structured task with maybe a checklist and you are going to need human beings, may be even peers, students in the class. I have seen sometimes actual experts from outside come in and make evaluations as to the quality of those outputs.

Connie Malamed: Interesting. Well Ruth, I know you have a very busy day, so I guess we should wrap this up. I want to thank you so much for all that you have shared with us today. I really enjoyed speaking with you.

Ruth Colvin Clark: Well, thank you so much. I appreciate the opportunity. Thank you Connie, take care.

I am just so impressed with how much Ruth knows. I could have spoken to her for hours. I hope you enjoyed the podcast. You can find show notes for this podcast with links to Ruth's books at the theelearningcoach.com.

Take care.