The eLearning Coach Podcast #17
The Limitless Possibilities of xAPI (Tin Can)
with Megan Bowe

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Connie: Hello learning people, welcome to Episode 17 of The eLearning Coach Podcast. Have you heard a lot of buzz about Tin Can or the Experience API, the new specification for learning technology? This new standard makes it possible to collect data about the wide range of experiences a person has both online and offline, rather than being limited as we are with the current SCORM standard.

In this episode, I speak with Megan Bowe, who has helped the Experience API, also known as xAPI, become the most successful and most quickly adopted learning technology innovation in the last 30 years. We discuss what the Experience API can do, how to work with it, and the mind shifts we must make to create an exciting future for the world of learning. Here is the interview, enjoy.

Connie: Hi Megan, welcome to The eLearning Coach Podcast.

Megan: Hi Connie, thanks for having me.

Connie: The main reason I wanted to talk with you is to talk about the Experience API or some people call it the Tin Can API or Tin Can, any other names for it?

Megan: Well, sometimes people have just called it xAPI, but mostly, it is Experience API or Tin Can.

Connie: Okay. I am glad we have three names, just so people can get really confused. So Tin Can API kind of grew out of and in relation to the SCORM standard because SCORM is known to have some limitations. Can you just go over what some of those limitations are?

Megan: Sure. SCORM was built in the 90s out of a request from the military, so that they did not have to continually buy pieces of content for each learning management system. So they pay somebody to build a course and then they would need that same piece of content in another learning management system that some other branch had. SCORM was built to address that problem; they wanted all their content to work in different LMS's, so they did not have to keep buying the same stuff.

The limitations grow from there, because at the time, Flash was used a lot, the browsers were not as advanced, the technology at the time when SCORM was built was just different. There are limitations in how the data can be communicated from the packages in SCORM, the communications in and out of those packages, the specific data pieces you can get—there are only four of them, and it is score, is it complete, and a couple of other things. So SCORM is really built to be used on a laptop in a browser in a sitting.

Now that we have mobile phones and different devices, sensors, Google Glass, all those things SCORM cannot touch because it just was not built with that vision in mind.

Connie: That makes sense, so the new and improved standard or the Experience API, what does that offer now?

Megan: So the Experience API took on just a piece of the SCORM standard, it is not replacing the entire thing. SCORM talks about how content should be filled, packaged, moved, played, and how the data should be moved around. The Experience API just looks at how the data should be moved and what data can be collected.

So all of the pieces about building the content and playing the content are still relying on SCORM or AICC, like if you need a standard for those, it is not Tin Can. What Tin Can does is, say you can record all of the activities that people are doing from whatever system or devices that they are doing, and it gives a series of ways to do that, which are APIs, which means application programming interface, we should have clarified that earlier. An API is a way for computers to say “Hey, I have got this thing” and another computer to understand that. So they

just are languages that computers speak to each other in. There are a lot of details about how APIs are created and built and the different methods for that, but the important part about the Experience API is that it is tracking activities and what could be read out as English, so actor-verb-object, " I did this."

So partially, there is this statement side, where you are recording as activities. The other big part is what we call a Learning Record Store, you will see it abbreviated LRS, and what that does is collect all the statements from different systems. So instead of building different ways for each mobile application and each video player and different devices to store this data and then trying to mash it up there, Tin Can makes the statements in the same language and all of those statements can be stored in this Learning Record Store. The LRS can sit in the middle, collect all this data, and then it can also share that data out back to other devices or systems or whatever it needs to be.

Connie: Okay. What kind of systems can create and use Experience API data?

Megan: So the potential there is kind of limitless, there are scenarios where it makes more or less sense, but just as a general rule, here are things that we did not really consider, that we do not often use in eLearning, now, there is a way to do that. So you can look at mobile applications, things like video portals, like YouTube, can make statements, Google Glass-like sensors, and people do things with Arduino. It is really a kind of modern web technology and networked technology, all of it could work with Tin Can. If you decide to do that, there is a lot of things you have to think through, so it is really what is best for this use case, do I have employees using mobile devices, do I want to track text messages, like what is the use case, for why I would actually add Tin Can to the system.

Connie: So before someone gets involved, you really need to think through what are your purposes?

Megan: Yes, you really have to have a clear idea of why you are doing something before you start adding the support because it is not trivial, it is work, and collecting everything just to collect everything is more on the NSA side than on the "actually making progress in learning" side.

Connie: Well, one thing that comes to mind is personal portfolios. I get a lot of emails from people that say how can I build a portfolio, and of course, you can build running eLearning lessons and show documents but what about all those times that people are learning things on their own, like watching a YouTube video, taking a Lynda.com course, reading blog posts or pdf documents. Is there a way or will there be a way in the future where people can track through Tin Can their own personal portfolio and their own learning experiences?

Megan: That is actually possible now. There is no easy one-step way to do that, but the dream is that if all this data can move around and you can collect all these different learning activities, not only does the organization need that but it is really valuable for the person to own it too, and also for that person to be able to share those things back to the organization they are working with.

So if you are sitting outside of your work and you are studying, you suddenly decided you want to be a designer and you are learning Photoshop and you are taking Lynda.com courses, you should be able to collect those activities to share them back, so you employer can see that you are actually now somewhat qualified to try and do some other things, so they can start recommending supports that kind of match that.

Now, there are a lot of steps to getting to this. One, organizations letting people have their data, and two, getting people in even like the meta-cognitive state of thinking “Oh, I should collect this activity somewhere, I have learned something that is valuable, I need to put a stamp on this.” So one thing is the concept of Personal Data Lockers, which is the portfolio kind of idea. In the Tin Can world, we have talked about Personal Data Locker. I love this because Ben Betts started building one and then came to the conclusion that until there is enough data, it is really, really dull to be doing this.

Connie: Interesting.

Megan: That is how Learning Locker, the Personal Data Locker he was working on was called Learning Locker, now he transitioned it to an open-source LRS for organizations realizing that you have to start at the organization collecting all this stuff and engage the people from there. Anyway, so the portfolio thing is really

interesting because you could go through and track all these things you have been doing from different places and have an interface where you can see it and work with your own data and realize where you have your own gaps rather than waiting for some learning department to do it for you or teacher or somebody else.

Connie: Right. I could imagine someone who participates in Lrnchat, the twitter chat every Thursday night, why not track that, why not show that "hey, this is part of how I have been learning." It just seems like a great thing for someone to be able to do, I would not want to be on the programming side having to figure out how to do it though. So Learning Locker, as an open-source tool for organizations, sounds like something that really has potential. I'm curious to see how that turns out.

Megan: I am actually really excited because Ben Betts' company basically found some funding, and we are like "we are just going to put this out to the world." So they are helping to steer the project but also they brought in myself and Aaron Silvers and a few other people on to the steering committees and we are going to have an alpha out this month, and from there, it is just going to grow. You know, anybody can come in and contribute code, they can give feedback on features, they can draw some wireframes if they want, so it is really kind of exciting to see how people are coming together around this.

Connie: That is exciting.

Megan: Yeah.

Connie: So now, what about the cases of performance support. How can Tin Can be used for that?

Megan: Performance support is really interesting because in the Tin Can world, suddenly you are not just tracking things that you will consider learning activities, you can also tack real work. So you could add Sales Force when you have to, but if you add Tin Can support to Sales Force, you could go through and see, this new hire came in, they created these opportunities, they watched this video on how to manage the tags on their opportunities, then we saw them actually add

the tags to the opportunities. So all those pieces of data can be collected. So you could also see when somebody is struggling. One example of this is what Sean Putman has done at Altair. Altair builds AutoCAD-like software, it is engineering software.

Connie: Okay.

Megan: So he is in charge of documentation there and said “You know what, I am going to get some of my developers’ time, I am going to have them add Tin Can support to the panels in the engineering design interfaces, so when people are going through these panels clicking the buttons, attempting to do a certain activity, like to draw a certain piece of a machine, I want each of those pieces of data collected about how they are going through the panels and using them.”

So with this data, he can look at an expert in the software and how they go through and do the work in there. He can also look at a beginner and look at how they are going through and using the panel, where they are struggling. They can either look at redesigning the interface that is not usable or they can add more information, they can make suggestions to people as they are going through it, “Oh, he has been doing it for almost a year now, he has been working on this.”

Over time, he is gathering more and more data, every time he gets a new piece and more things come together, he has this little feedback loop going where he can see how either the interface needs to be changed or the supports in there need to be better. And there is definitely a lot more to be learned, he is kind of scratching the surface now.

Connie: Okay. So he can use it to be able to provide appropriate performance support to people; for example, how usable some software is, and then he can take that data and see where the worst parts of the software are and provide performance support or figure out a way to improve the software itself. That is amazing.

Megan: Yeah, it is really cool.

Connie: Now, what is this thing that I hear about using Tin Can with Open Badges? Can you explain what open badges are and how Experience API can be used with it?

Megan: Yeah, so Open Badges is a project from Mozilla, and the idea is that there should be a standard for how badges that exist, online devices whatever, should be interoperable just like we think that learning technology should be interoperable.

So having a badge that has certain criteria attached to it, such as: you have to click 20 times, you have to have a score of 10, there are different requirements in order to earn the badge. Open Badges say this is how that stuff should be structured, so when you move a badge from one place to another, it retains meaning.

Like imagine if you took a badge from Code Academy and tried to give it to LinkedIn, it does not know what to do with that. LinkedIn does not know the meaning of that badge. With this standard, the goal is that you could take that, and they can extract some meaning from it. So if you look at the portfolio front, just showing a list of data about activities you did is not that interesting, but if you start grouping them into badges showing an accomplishment that becomes more interesting.

So one example is LifeWay, which is a company that Rustici Software works with, it is a religious publishing institution. They built a portal where, they call it Ministry Grid, you get badges for watching certain collections of videos, so they have used the Open Badges standard and used the Tin Can activities as evidence for the badges. So not only do you have this way of transferring a badge that retains its meaning but you also have all the activities that you have pulled from the LRS that you have a way to make sense of. So suddenly you have this way to basically credential something plus you have the evidence of it.

Connie: So how did they look at the data?

Megan: They have some interfaces for looking at the data, but they have the badges they set out in advance, so they say there are certain ways we want to

keep people engaged in this and then they say these activities constitute those things. Now, the badges are literally just displayed in the interface. One of the requirements of Open Badges is that it have a specific image that is round and kind of looks like you are a boy scout. It is a certain size and they generally end up being round, but they have an interface where a person can see what they have and go through and click and see what they have done to earn it and all that.

Connie: Okay. So the badge is going to represent some learning and probably activities that you have done and they are combining that with Tin Can, so they can create a learning record store of a completion of these activities, is that what you are saying?

Megan: Kind of. They are using the badges to group activities that matter to them. It is important that a person has watched these 4 videos because that means they are now qualified to do this activity. Those videos, each of them, make a specific Tin Can statement when they watch it, so Megan watched intro to candle lighting, Megan watched fire safety, Megan watched whatever, each of those gets filled into the badge as they do them. Then when the badge is complete, when all the criteria have been fulfilled with the Tin Can statements, then they have got this complete package of the badge.

Now, those statements are still being stored in the Learning Records Store, the badges do not actually live in the Learning Records Store, and they move that badge, let us say some other division wants to see what Megan has done, they can say, “Oh, she has this badge, this badge, and this badge.” At a high level, they can say “Okay, she is definitely qualified to do the candle lighting activity but I want to see the evidence, like I want to see proof that she actually did this,” and there are ways that you can make it more valid, but then they can just say, “Hey learning records, what are these things?” and they can get more information on the statements that have made up the evidence of that.

Connie: Using Open Badges is a really interesting way that people can go as far as their own portfolios, right?

Megan: Yeah. That is an open standard too, and they have what they call a backpack that you store your badges in, kind of like we have an LRS that you store your statements in. So there is an interesting combination of things there that could be really, really powerful, but getting people engaged in this and wanting to do it for themselves is something that is going to take time.

Connie: Yeah, because on the one hand, you need to convince and evangelize to vendors, but a lot of vendors do seem to be adopting it at least in a SCORM-type way. But then you have got that other issue of trying to convince the masses that this is something worthwhile to use.

Megan: Right, and the SCORM parity problem, I will say it is a problem, really needs some heavy push to clear that out, like there are so many people who have adopted it in a SCORM way, that nobody is really thinking beyond that. So you can publish a course in Storyline that makes Tin Can statements

Connie: But there is nothing special about it, is that what you are saying?

Megan: You are still going to get the same data you would have gotten from SCORM. Like that is not the big picture here, it is kind of that baby steps. So what is next, when are we going to let instructional designers decide which statements are made, how are we going to let them pick interactions that are really important inside of the course they have made and track that has been done, there is a lot that needs to move forward there.

Connie: So in a way, it is almost misleading, I am not saying there is anything wrong with putting Tin Can in there, but it is almost misleading when you see it is just another option and it is not going to do anything different.

Megan: Yeah.

Connie: And what you are saying is that you can do a lot outside of an LMS, right?

Megan: Yeah, that shift in thinking is, it is a big hump we are all going to have to get over at some point, but it is slow going.

Connie: Right, so we need that big shift in thinking and that is why we are talking to you. You had mentioned to me that some of the MOOCs might be starting to use the Tin Can standard for learning outcomes, can you talk a little bit about a case where that is going on?

Megan: Yeah, MOOCs get a lot of press, which is interesting, and sometimes people are a bit snarky like, “Ahh, the completion rates are horrible.” But if you imagine the 30 people who actually went through it and did get free educational activities, it was valuable for them.

What is interesting is when you look at how people engage with MOOCs, because there is a huge dropout rate where people do not engage or they only engage for a minute, then they wander off. It is really interesting to kind of try and figure out why or how or where that is happening and see, is it a problem with how I am building community within this MOOC? Because people actually want to work together. They think the main glue throughout MOOCs is the community that happens among the people in there because there are so many. Is it that the content is confusing, is it that they just do not want this gated structure, they just want to go to this week 12 activity which is the only thing they want to learn from this entire thing because the motivation for coming into a MOOC is really hard to pinpoint. What is important to each person and how can we engage different groups?

What they have done with Curatr, which is a social learning platform (it is from the same company that built Learning Locker), they wrote MOOCs that make Tin Can statements. So inside the MOOC, they are learning about digital curation, there are others that they do, but one is about digital curation. You are going through these activities, every time you watch a video, a statement gets made; every time you log in, there is a statement. There are statements for comments and up voting and typical social activities, but you can start to see these patterns where “Okay, at the beginning, everybody is participating a lot, then you can start to watch people drop off” and like “did they come back,” “what brought them back.”

You can start to track these different paths they are taking through, so you get this really interesting picture of how people are actually interacting with this course as compared to “We started with a 1000, we end it with 30,” and they get an email that said “thumbs up.”

Connie: Yeah, that is really interesting. So in other words, people can use it to modify the learning experiences that they’re building because they are getting all this data in.

Megan: Yeah, and you can get closer to real-time information to maybe reengage people the next week. Maybe you send out an email that says “Oh, new content is here,” and even if you are not getting insights from just reading the data, you at least find a place to start asking the right questions. So you do not have to be a data scientist to get value from this, you just have to be paying enough attention to say “Oh, that is weird, why is that happening,” and start asking people.

Connie: Very interesting. So Megan, if there are some instructional designers and learning experience people who are listening, who are starting to get excited about this, and they want to start getting involved, what is the best way to get started with the Experience API?

Megan: Getting started with the Experience API does not start with technology, and that is a really important thing to remember. Rather, it is that vision, knowing what you are going to do and why are you going to do it is the most important part. So research, what are people actually doing that I need to support? What are the outcomes I am looking for, what systems are they using to do the things that matter, how much access can I get to them then having a vision for what their performance looks like or teaching them a certain concept and why and how they are going to use that concept in a way that is intrinsically motivating to the people you are delivering it to. Also ensure they can see the direct relation between what you are doing and the outcome that they are going towards, that is the most important part.

This is really interesting because Rustici Software did a program when they started working on their Watershed LRS where they said “We are going to give

some really big discounts to some people but they have to apply to come work with us." So they accepted applications, just proposals basically like a few pages long, but they went through and read hundreds and hundreds of pages to find people who had the vision to work with, because if you are trying to build something with Tin Can and you are constantly fighting an old mindset or management structure that would not accept it, you are not going to get very far. It is really easy to tear it apart at that point, be like "Well, obviously that does not work because you could not accomplish this." So having the right vision so everybody is ready to make big changes is really the first step.

Connie: I am just curious, how many people out of all those applications did they find, do you know?

Megan: So they announced, I believe, they were planning to accept 6, and I think they actually accepted 7, and there are big names in there, like Catholic Relief Services and Yum brand foods which is like Taco Bell or KFC.

Connie: Rustici is working with these companies to help them implement their vision?

Megan: Yeah, and they are in the planning stages now, and they will be for a while because you do not need to build anything until you have got not only the plan for the technology but little proofs of concept prototypes where you are saying, "Okay, I think I can get this thing to actually work."

So they are in planning phases now, and the planning phase is really fun though, because you can draw these big crazy ideas and then pull it back to what is real, what can be accomplished by said deadline. And if you think about it rather than think about what you suspect it can do or what you have heard about Tin Can doing, it is better to think what is my ideal world and then see what pieces you can point at and say "Oh that is a place I can get data from," "Oh, that is a place I can get data from."

Connie: So once an organization, an enterprise, or group of people have their vision and they begin to plan it, do they need to have an experienced programmer on staff or to contract with one to actually start implementing?

Megan: Yeah, that is the point where you want to have somebody who knows this specification for Tin Can really well. You do not really need to hire a fulltime programmer unless you are going to build some custom things from the ground up, it is best to have somebody who knows what is out there and what it can do plus enough to actually get your system to make statements.

So not all programmers are going to have an idea of what is available already, because you do not want to build something that already exists. Like if there is a tool out there that does the thing, you want to just use that and then this other piece you want to build from scratch if that does not exist yet. Either you bring in programmers or find programmers within the organization to actually implement the vision or you work with an outside company, and there are a lot of companies who have made it their entire business to support this spec and there are consultants out there too who also do a lot of work. It is kind of how does your organization work, do you usually work with third parties or do you usually work with people inside the organization.

Connie: Well, in terms of finding tools that already exist, is there a list of those somewhere that people can refer to and I can put that in the show notes?

Megan: On the Tin Can API website on tincanapi.com and on ADLs Experience API page, there is a list of companies that have adopted, but it does not really describe how a product works or how it uses Tin Can in depth. Honestly, the best way to find out what already exist is to…….probably ask me but ….

Connie: Okay, everyone, email Megan.

Megan: Yes. Everybody, Twitter now…….. Actually, it is better to just put it out on Twitter under the hashtags for Tin Can API and xAPI. And people are really happy to help in this community, like that is one really awesome thing about the Tin Can community is that this spec has been worked on by an open group that was led by Aaron Silvers, who was at ADL until recently as the community manager, and so people are really open and willing to help, and just putting a

question out there, you are generally going to get a bunch of answers, so it is really cool.

Connie: Yes, that is very nice.

Megan: So I guess in summary to your question about having a programmer and getting started with this, it is one, the vision of the research obviously; two, it is to find a person who you trust to answer questions and they should be somebody who is an expert on the spec. Then, you could make hiring decisions about programmers from there, but it is really important that you just make sure you have somebody who can confidently answer the questions with knowledge of this space.

Connie: Good advice. Before, we wrap up, I just wanted to ask, are there going to be changes coming to the standard as it is still getting worked on or do you feel like it is fairly stable and will not be extended?

Megan: The spec has been at a stable point for quite a while now. The 1.0 spec came out in April last year, and there have been minor changes but not breaking changes, like clarification of text and little things but not like if you implement version 1, this change has been made so you actually have to change what you have done. It is more like ”Oh, this is a little bit better now.”

So the big thing with the spec now is the IEEE, the big standards body, “here is how you make a plug that goes on a wall so all vacuums can plug into it,” IEEE is building a working group to study what it will take to make Tin Can a formal standard. The group will exist for 6 months doing this research with different organizations, different people in the industry, and then at the end, they will come out with a report to say here is what we have to do to trim Tin Can into a formal standard or here is why it would not work and here is the reasoning for that. So that kicks off on February 24th, and there is a webinar, I will give you a link to put in the notes for the show to those people who are interested in getting involved with that. So I do not picture any changes until at least that working group is done and we will see if there is going to be massive changes or if it is pretty good as it is.

Connie: That is big, that is really big.

Megan: Yeah, it is exciting and it is also funny because Aaron Silvers is also running that working group.

Connie: Well, I think that is a positive sign. Megan, thank you so much. You helped me understand the API better, and I am guessing if you help me understand it better, you helped a lot of other people who are listening understand it. So thank you so much for your time.

Megan: Great, I am happy to help anytime, thanks for having me.

Connie: The Experience API has the potential to create big changes in the types of learning experiences we design. The impact of this new approach will allow each one of you to envision a future of learning like nothing we have seen before. You can find links to the resources we discussed in the show notes at theelearningcoach.com/podcasts/17. Please share your thoughts about xAPI in the comments section. I would love to hear from you. Well, that is it for now, take care.