

Interview on Evaluation in Informal Science Education: Rita Bell

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Interviewee: Rita Bell, Director of Education Programs, Monterey Bay Aquarium
Interviewer: Lisa Peterson, SK Partners
Note-taker: Alice Fu, SK Partners
Date and Time of Interview: May 16, 2013, 3:30pm to 4:55pm (Pacific)
Location: Phone

As part of our efforts to understand current evaluation issues in informal science education (ISE), we conducted interviews with leaders in the field. We purposely selected a sample of individuals who could provide insights from a range of perspectives; collectively, they have experience with ISE and ISE evaluation as practitioners, evaluators, researchers, funders, and institutional leaders. Several participants generously agreed to share the transcripts from their interviews.

Please note:

- These are transcripts of oral interviews, *not* polished or written remarks prepared for publication.
- These transcripts have been edited for clarity, brevity, and ease of reading. Participants were also provided with the opportunity to remove any potentially sensitive material.
- The views or opinions expressed are solely of the individual interviewee and do not necessarily represent those of their affiliated organizations.
- We intend for these transcripts to serve primarily educational purposes. We believe that others may benefit (as we did) from the rich insights provided in these interviews.

Interviews were semi-structured: we used a protocol that ensured asking key questions in a comparable fashion across interviews, but there was ample flexibility to allow for interesting and unpredicted turns in conversation. The coverage and order of questions varied across interviews. Interview topics included but were not limited to participants' views on evaluation uses, methodologies, "best practices," and challenges. Interviews were conducted in-person or by phone, and each lasted approximately 90 minutes.

In these transcripts, the following conventions are used:

- Initials indicate who is speaking. **Blue text is used when interviewer is speaking.**
- *Italics indicate paraphrasing or researchers' comments/interpretations.*
- 'single quotes' indicate hypothesized thoughts or questions; e.g., And I asked 'what have you had done before? And what did you think of it? And what do you need?'
- - single dash indicates an interrupted thought or change in thought; e.g., It's just been - I was just so happy to have had that opportunity to work with them.
- ... ellipses indicate overlapping speech, deleted sections.
- [brackets] indicate non-verbal observations and other clarifications added by SK Partners.

[BEGIN INTERVIEW]

LP: As we mentioned in our email, we are interested in learning from leaders of the field of informal science education and we are very, very pleased to be speaking with you today. So to warm up, can you spend just a few minutes walking us through some personal highlights of your career, especially in relation to informal science education and evaluation?

RB: Okay. I started working after college as a 7th and 8th grade math and science teacher in the San Jose area and taught there for quite a few years. Started in 1973. In 1986, the aquarium, Monterey Bay Aquarium offered its first teacher institute. I had been doing some professional development classes through UC Santa Cruz extension. In one of the classes that I was taking, the guide was friends with the education folks down here at the aquarium and so he invited them to come in and give us a little overview about the aquarium and also about this institute program that they were offering for the first time in the summer.

So, it was very appealing to me and I signed up and participated. It was 8 days of field-based stuff. Got to go tidepooling, and muck around in the mudflats at Elkhorn Slough, and did beach transects and all sorts of stuff, and learned a lot about science and teaching science, especially marine science. I came away with a bunch of new activities to use with my students and a sense, for the first time, of being treated like a professional. There was just something about the camaraderie that developed with the team. I just really felt like my experience in the institute gave me a huge shot in the arm in terms of reenergizing me, getting me refocused on teaching again and excited about teaching again. And then the Institute program was set up so that we had our summer program and then we had 3 follow-up sessions during the course of the school year, which is pretty much the same way it currently developed.

But over the course of that following year, I just got more and more intrigued by what the aquarium was doing and an opportunity arose for me to help in the following summer as kind of a co-facilitator for that teacher institute. So starting in 1987, I started working for the aquarium part-time in their teacher programs area, helping out with workshops and institute programs. And then continued to teach full-time during that period as well. Then in 1997, the opportunity arose for me to accept a full time position down here at the aquarium as the Teacher Programs Manager. So I left the classroom, and we relocated down here, and have been here ever since.

LP: Wow, you've had a very interesting career.

RB: Yeah it's been great. I feel like it's been nice. I've had an opportunity to have a good solid sense of what the formal classroom was like and then informal science as well.

LP: That's a great balance. Now, did I hear you right that you were working at the aquarium part time and teaching full-time?

RB: Yeah, but my part-time work at the aquarium was on weekends and not every weekend—it was sporadically throughout the school year and then just during the summer for about 2 weeks.

LP: Wow. That sounds like a lot of work.

RB: It was a lot of work but it was just a ton of fun.

LP: It sounds like a ton of fun and a wonderful experience.

RB: Yeah, definitely.

LP: Great. And when you think about evaluation work that you've participated in, can you think of an exemplary or favorite evaluation project?

RB: Hmm. Well, at first I really didn't like evaluation projects, because, like a lot of people who come from the formal classroom, evaluation usually means somebody coming in to take a look at the way that you are teaching and criticize. You know, give you some kind of critique about it. So, it took me a while to even understand or accept the idea of an outside evaluator and understand what their role was and how it would all fit together with program improvement.

That is just a little personal aside. But my favorite evaluation, the one that I think maybe has gathered the most information and provided us with the most insight into programs, is an evaluation that we do with our WATCH program that is multi-faceted. It takes a look at the standard pre-post surveys, but at the end of program, instead of the kids answering another round of survey questions, what they do is they create a storyboard that illustrates what they were like at the very beginning of project, what they were like in the middle of project, and how they feel about themselves and their team at the end of the project. So they have those three illustrations and then they tell the story. They communicate that to the evaluator and the rest of the people in the group.

LP: Ok, great. That's interesting. And that was for the WATCH program?

RB: Uh huh. The WATCH program is our program that we do with high school kids in the Watsonville area.

LP: OK, great.

RB: It's a yearlong project. So we see the kids for two weeks in the summertime and then we work with them throughout the school year.

LP: Is that evaluation project ongoing? Or is that something that happened in the past?

RB: No, it's ongoing.

...

LP: OK, wonderful. Thank you for that. So it is sometimes said that evaluation is both an art and a science. How would you interpret that statement?

RB: Well I think that there are certain times when your evaluation can be objective and you can have, like a survey question and 'rank these things,' or 'do you strongly agree, or agree, or strongly disagree.' Those sorts of things that are pretty objective and pretty cut and dry. And that can be distilled down to 'you got a 6.5 out of 7 on a rating by the teachers on this program.' So you can have that sort of objective thing.

But then a lot of times, when we do evaluations, we're looking at something a little bit more deep than that. We're trying to tease apart what people have learned, what kind of changes they have experienced as part of their involvement in a program. And you can't really distill that down to a numerical scale. You really have to listen to what people are telling you, and ask good follow-up questions in order to get to the heart of the matter.

So I think a lot of what we do is also focus groups. We also do one-on-one interviews with people. And so I believe it's an art to be able to listen well, to be able to respond in a way that you can then go and ask a little bit deeper questions, get additional follow-up. It's not something that is just a cut and dry, fill in the blank, or check off the box.

LP: Ok, that's interesting. And it makes me think, can you tell me more about the process for evaluation at Monterey Bay Aquarium?

RB: Yeah, I can tell you about the process for evaluating our education programs. We also do a lot of other evaluation, exit interviews with people who have been visiting the aquarium, and exhibit evaluation, and that sort of stuff.

From the education perspective, what we do is, we have an outside evaluator that we've worked with, and have worked with regularly, for about the last 15 years. We sit down with her at the beginning of a new project. So, if we are going to start a new program, we'll invite Chris [Parsons] in to talk with us. And we'll actually help her help us walk through the development

process so that, you know, we may have done a little bit of work ahead of time but once we're getting to the point where we're really starting to flesh out the program and the philosophy, we want to have the evaluation develop in conjunction with the program development, so it's not an after-the-fact kind of evaluation. So Chris will sit down with us and we'll talk about objectives, we'll talk about what it is that we're going to hope to accomplish, we'll talk about our activities.

She's really good at pushing back on us when we say, 'Well we want to do this.' She'll ask us, 'Why? What is the purpose for that? How do you think that will that help you achieve your goals?' So she helps us to be a little bit more critical in our thinking. Then, [she] develops the evaluation tools just around the same time that we're developing our program goals.

Then, generally, our first round of evaluation - our first time that we go through the program - we may do a little mini evaluation, more just to test the evaluation instrument and not go into terribly too much depth because we know that we're going to make a lot of changes after the first time we go through it anyway. It's more of a formative kind of thing, we are just trying to figure out, 'Does this work? Does this sequence work?' So we're looking at elements of the program more so than the impact that it is having on the participants. And we may do that, you know, go through 2 or 3 iterations of that depending upon the complexity of the program

But once we're pretty satisfied that we've got the system and the program down, and it's running well, and we're satisfied that we're not going to be making major changes to it, then we'll actually dig deeper and start looking at developing evaluation questions that will help us measure impact and what kind of impact is this having on the students or the teachers, the participants. That's our second level of evaluation.

And then if we go through and we have a program, like we have our Young Women in Science program for example. I mean that program has been ongoing for 15 years or so. We haven't made many changes to it. We've evaluated it quite often and we've found that the evaluation results are really consistent year after year. So then we may not do an annual evaluation of that project for a while. We'll sort of take a hiatus from that and put our evaluation money towards some other project for a while. And then, if we make changes to it, or something new happens or there's a new content focus, we may go ahead and do another evaluation just to see whether we're still hitting the mark or not.

One of the things that we have been really trying to do fairly consistently is to try and get a sense about the long-term impact of our programs. And so, over, I would say the last five years, we've had a couple of longitudinal studies where we've taken a look at kids who have participated in our teen programs; it could be any teen program. And just try and figure out where they are now. What are they doing? Looking back, can they tell us anything about how their involvement in

programs at the aquarium impacted any of their behaviors, or study decisions, or career decisions? So trying to get a sense of, 'Did the experience have a long-term impact on them?'

LP: Ok, great. Thank you for that. So it sounds like you've been using this process- you said you've had this same evaluator and the same process, for the past 15 years? [RB: Yeah, since I came here. Yeah.] Ok, great. How do you feel that process is working for you?

RB: I think really well. It's nice because Chris understands us. She knows the staff really well. They really respect her. She gives us good feedback. It's very honest. She doesn't pull any punches, which is good. I think the nice thing about it is that we're able to now look at maybe a bigger picture evaluation.

So I can tell you where we're headed. Ever since I've been here, we've had these different program areas, and even within each of the program areas—teen programs, teacher programs, and school programs--there are individual [programs]. Like our Young Women in Science program, or our WATCH program, or our Student Oceanography Club - there are individual programs within each of the program areas. Up to this point, we've really been just running those forward as independent [programs]. SOC is a different program from Young Women in Science, and the evaluations are different, and the planning is different, and the team that works on them is different. We've been sort of silo-ed in those different program areas.

With a new strategic plan that we developed here aquarium-wide about 2 years ago, we identified a single overarching goal for education programs and that was to develop a generation of young adults who are inspired, ocean literate, confident, and ready to act on behalf of the oceans. So we have those four strands – inspired, confident, ocean literate, and ready-to-act .We are looking at how those four strands play out in every single one of our programs--whether they are programs for teachers, for kids, for school groups, or whatever.

And so Chris is helping us, sort of, take that big picture, more holistic look at our programs, and trying to identify which aspects of our programs really emphasize inspiration, which emphasize skill building and confidence developing and efficacy, and which aspects really focus on getting the students and teachers and parents ready to act and to become involved in conservation activities and so on.

So, it's a really neat development, an evolution I think, going from working on individual programs to now taking this much broader view of all the programs and assuming that at some stage, we're going to have kids who will come for a school visit and their teachers will be part of our teacher institute, and then they will come back and participate in one of our teen programs. So we want to make sure that what's happening is that the programs are somewhat aligned and they're all heading in the same direction.

LP: Ok, thank you so much, it's really interesting to hear that elaboration and both kind of what you have done in the past and then where you are heading now going forward and kind of that holistic view of evaluation and how to integrate those things. And I'm wondering how have some of these results contributed to decision-making at Monterey Bay Aquarium?

RB: Well, if we have programs that are failures, we get rid of them [RB laughs]. If we have feedback from our evaluation that indicates that things aren't working well, then we make whatever changes are necessary in order to get them to work. I'm trying to think if I have a nice concrete example for you. *[pause]* And of course nothing is coming to mind.

But I know for our Young Women in Science program, for example, we have changed the way that we evaluate the girls. The Young Women in Science is bilingual so we recruit heavily from groups where the kids are Spanish-speaking or their families are Spanish-speaking. We do the program in both English and Spanish. We've learned an awful lot through the evaluation about how to conduct those programs in a much more culturally sensitive way and also we've learned how to conduct evaluation in a much more culturally sensitive way. At one point we used to say, 'Ok, well if you're a Spanish speaker, come up and get the blue evaluation form and if you're an English speaker, come up and get the pink evaluation form.' Now, the evaluation is English on one side and Spanish on the other side so the kids don't have to choose or feel like somebody is going to look at them differently if they take the Spanish one versus the English one. It is one of those things that we should have known before, but we didn't. But we learned quickly that that wasn't the way to do the evaluation.

LP: Thank you. It's so useful to have an example for that. And you had mentioned sometimes you use the information to get rid of failures and sometimes you use the information to make changes. How do you make the call on whether it's a failure or whether it just needs some changes?

RB: Well, I think there's usually more than just what the evaluation tells us. Usually, a program is a failure if we can't get people to participate in it. If we are getting good participation numbers, and we have people who are signing up for the program and attending, and they keep coming back. Especially if it's a multi-day program, then we consider the program worth saving and worth improving and working on to make sure that it's really meeting the goals.

Sometimes, we change our goals because we realize that they're impossible to achieve with the program format. So I guess that's another thing that does happen. Evaluation helps us to realize that maybe our goals are too lofty or they're unrealistic for the kind of program that we've developed.

Again, with our Young Women in Science program, we had a program that we knew that we wanted to establish this longer-term relationship with the girls. So we thought 'let's just have a high school Young Women in Science program, too.' We tried that for about a year, 2 years I guess, and the evaluations came back. The girls weren't having as much fun. So the kids that did attend [the program] - we're not sure why they kept coming back, but they weren't having very much fun. So we decided that that probably was not the best approach to what we wanted to accomplish. So we jettisoned that program.

LP: OK, great. Thank you so much.

As we've been reading and talking to people about evaluation in the field, we've kind of been struck by something. It seems challenging to try to meet evaluation needs while remaining authentic to the free-choice nature of informal learning experiences.

RB: Yes, that is true.

LP: What are your thoughts about this issue?

RB: Well, this is one of the things that we talk a lot about with Chris. Often, we want to see what kinds of things are the kids learning? Well, we could give them a test, but that's in exact contrast to our learning situation. So we want to try and make the evaluation activities match with the kinds of experiences that they're having. So that's why we do some surveys. If we want to go deeper with people, it's more interviews, or storyboards, or concept maps. So there's not like a right answer or a wrong answer. It's kind of like, 'Ok, tell us what you know, tell us what you understand or you remember,' a conversational and non-threatening kind of fun way, as opposed to sitting down and taking a test. Because that's not the kind of experience that they are having in these informal settings. It's not just rote memorization. Yeah, they're learning stuff, but they're learning a lot more than we can measure with a test. I hope that makes sense.

LP: Yeah, that's great. Thank you. I think those are good examples. You mentioned some specific things that you do in terms of the concept maps and the storyboard and the more conversational interviews. It's interesting.

Funders ask programs to carry out summative evaluations a lot of times; and of course, the programs comply. What do you think funders are looking for in those summative evaluations?

RB: I think they're looking for validation that they invested their money wisely. That what they've done had made a difference. You certainly can't blame them for that. When I invest my money, I want to see something come out of it too.

I think different funders probably have different experiences with the kind of outcomes that are realistic. I think some funders think that test results or graduation rates are the best measures. And those are good measures but they're not the only measures.

LP: So that's the funders' perspective. Now I'll have you put your hat back on. What do you think summative evaluation should be?

RB: It should let us know whether or not the program actually had an impact on the people that participated in it—whether we achieved the outcomes that we anticipated. And it would be nice if it illustrated that we had outcomes even beyond those that we anticipated. Sometimes, we say that we want to measure certain things, but the kids are learning a lot of other stuff. They're developing things and we're not measuring all of that stuff. So it would be nice if we could figure out what that other stuff was that they learned along the way without evaluating the death out of them, or the life out of them.

LP: Yeah, that's interesting. And one thing we've seen is, we've seen a lot of descriptive studies that really kind of describe what is happening in the program as opposed to more comparative studies. What kinds of things do you see in the aquarium in terms of your evaluation studies?

RB: Well, we do a little of both. We tend to like to do comparatives within programs. So, for example, our WATCH program, we had a 3 year comparison so this is the way the program worked in year one and these were the results, and then year 2 and year 3. Showing changes over time and how maybe modifications to the program that were implemented in year 2 might have had an impact in the results and that sort of thing. So we'll have some comparative within a specific program.

We did a comparative study with our school programs. Kids, when they come here to the aquarium on a school field trip, they have 3 choices. They can either sign up for a Discovery Lab program which is a 60 minutes, facilitated- staff-led program, hands-on activity. They can sign up for an Ocean Explorer program which is like a 25-minute auditorium presentation. Or they can sign up for a self-guided program. And after the Discovery Lab and after the Ocean Explorer program, the kids still get to go out and explore the aquarium on their own. So one of the things that we were trying to do was to figure out, 'Well, what difference does the program make on the overall experience that the kids are having?' That was an evaluation that actually did a comparison of kids across different kinds of programs.

So those are a lot harder to do [RB laughs]. And take a lot more time. It's very interesting and really worthwhile, and especially if you're facing tough decisions. You can't do everything that you want. Well, which one is going to be most effective? So comparatives help. We have not done anything where we've compared our programs to other people's programs though.

LP: Yeah, you said it's worthwhile if you are facing tough decisions. You said it's harder and it takes more time but it's worthwhile if you are forced with making tough decisions. [RB: Right.] Do you remember if you made any decisions or changes to the programs based on the comparative study that you just talked about?

RB: Yes, we did. [laughs] We had assumed, of course, that the hands-on Discovery Lab program, facilitated by a staff member, 60 minutes long, and then a trip out to the aquarium, would be the one that showed the kids that were most excited and learned the most. That wasn't the case.

So it gave us an opportunity to think about the evaluation study, and did we study it the right way? Of course the first place I went was, 'Well I'm sure they learned what they were supposed to, but we just did the evaluation the wrong way and that's why we came up with these bad results.' [laughs] And then, of course, you know, we went back and really looked at it and said, 'Yeah, that's true. The questions that we asked were not trying to get to specific content. It was more general and more about conservation issues.' So we really took a hard look at that Discovery Lab program and decided that we needed to make some significant changes to it.

One change that we made was to make a much better connection between what happened in the Discovery Labs and what the kids were going to experience when they went out on the floor. Because we figured that what happened is when they came into the Discovery Lab, that was a novel experience for them. It was new, it was totally different from what they were used to. Then, when they went out to the aquarium floor, that was a second novel experience for them. So they wound up having 2 totally different, disjointed experiences. So instead of a 3-hour experience, they had a 1 hour experience and a 2-hour experience that didn't necessarily connect very well with each other.

Whereas the auditorium program is really designed to set the kids up to do an exploration of the aquarium. And that was the program that had the highest ratings in terms of learning and that sort of stuff. It made us kind of take a look at our Discovery Lab, kind of reformat it. Think about it in a different way. So we've made significant changes to it [Discovery Lab].

LP: Thank you. You've given a couple of really interesting examples of evaluations that you've really used in your decision-making. And I'm wondering how you disseminate the results of your evaluation studies and to whom, in order that they are able to be used and inform decision-making.

RB: Well, I think that is an area where we could do much better. Right now, the evaluation reports come to me and staff. We look at them and maybe we'll talk about them. We'll certainly

meet with the evaluator, and have an opportunity for her to walk us through the reports and the results, kind of debrief about it.

And, as requested, they will go to funders if they ask. Some do and some don't ask for the evaluation reports.

We've had a couple of opportunities where we've been able to submit articles to journals, so some of our evaluation results have been disseminated that way.

But for the most part, they come in, we review them internally and they stay here. We do put together sort of a synthesis of our evaluation document and it's available for senior staff if they're interested.

We also share the results at AZA, ASTC, NMEA, and other conferences.

LP: Ok, great. So you've mentioned, the debrief and the meeting you had with the staff and the evaluator. Sometimes it's sent to the funder, a few have been submitted to journals and a lot of them stay internally. And you also mentioned that that might be something where you could do some things differently. I'm wondering what do you think is the best case scenario for how, especially summative reports, could be used by various stakeholders?

RB: Well I know it would be helpful for us to hear from other program providers, you know, what their findings have been in programs that are somewhat similar to ours. So if they're doing a teen volunteer program and they've been doing it for years, and they have some summative results, it would be interesting to hear about that.

At one point, we were part of a group called ZATPAC, which was: Zoo and Aquarium Teen Program Assessment Consortium. It was an NSF project where there were six institutions: I think 3 aquariums and 3 zoos. We got together with the idea of creating a collaborative logic model for our teen programs, and then identifying some evaluation questions that we could all use across the board. So like I wouldn't use all of their evaluation questions, but I might use 3 or 4 of them in my regular evaluation and so would the Woodland Park Zoo, and the San Francisco Zoo and those others. The idea was, then we could get together and take a look at our programs, take a look at the results for those specific evaluation questions, and really learn from one another about what worked really well and what didn't. And which kind of programs seemed to be more effective. That was a good start.

Something like that would be interesting to pursue again, where you had some common evaluation questions. But it seems like people are at such different points. Institutions are at such different places when it comes to program evaluation, that it's hard to get them to agree on that

kind of stuff. But it would be helpful. Why should I reinvent the wheel if here's a program that's working really well and it's got the goals that I would like to achieve as well, and a process that seems like it would be easy to translate to my setting. It would be nice to know.

LP: Yeah, the ZATPAC is interesting and you mentioned that was kind of a good start. It would be interesting to pursue further and one obstacle is that people are just in such different places. Are there other challenges that keep this scenario from happening?

RB: With the ZATPAC group, it came down to staffing and time and budget. There was one institution that had an in-house evaluator who could do the work and nobody else did. And so everybody else had to add to their budget and they didn't have the budget. And then their staff couldn't do it themselves because they didn't have the expertise. So, you know, I mean it's those kinds of things are problematic I think.

Informal institutions, I think, none of us wants to be just like everybody else. [RB laughs] We all want to have a little bit different take on the programs that we do. So we want to play together, but sometimes we don't. Sometimes we don't play well together.

LP: Thank you for that. That's very honest.

Related to that, what do you see as the most critical evaluation-related challenges and issues that need to be addressed in informal science education? So, where do you think the field needs to go?

[RB pauses for a few seconds]

RB: Where do we need to go? Well I think one of the things we need to do is to develop more of those authentic evaluation tools. Really move away from the satisfaction survey kind of approach. There are a lot of organizations that they think if they're doing that, that's fine, and they've evaluated their programs. They need to see that there's more to it than that. So understanding how evaluation can be more than just a satisfaction survey.

So, that's kind of philosophically, too, what is the role of evaluation in your programs? Is it just to show that you're doing a good job? Or is it to help you learn and improve?

LP: How do you see that?

RB: Well, it's nice to know that you're doing a good job, really, I mean, and that's great. But I want to see how I can do a better job. I want to see how our programs can improve. How we can even maybe raise the bar. Maybe we said, 'This is what we want to accomplish, this goal, but

now look, we've already accomplished that, so let's raise the bar a little bit more. Let's see if we can push ourselves and our participants a little bit higher. Maybe there's more that we can accomplish than we thought we could.'

LP: Yeah, so you mentioned developing more authentic evaluation tools and getting away from the satisfaction survey approach and then raising the bar and looking to improve. And previously you also mentioned some of the challenges were staffing, time, and budget. So how do you think some of those challenges might be overcome in order to reach those goals of having those authentic evaluation tools and raising the bar?

RB: Well, I think it comes down to resources and priorities. For us, here, evaluation has become just a norm. This is something that we do. When we do a program, we evaluate it. When we're starting a new program, this is what we do and it has become engrained in our culture. We invest a good chunk of money in evaluation every year. It's gotta come from somewhere. It's gotta come from either somebody at the top, somebody saying, 'That's of value to us in the institution, and I'm going to give you the resources you need in order to make it happen.'

When I first got here, one of the ways that the existing staff was solving the problem was that one of them was getting her Master's degree and she was focusing on program evaluation. So on top of all the other stuff that she did, she was thinking that she would be the internal evaluator for all of our school programs. That didn't work out. [RB and LP laugh] She didn't stay here at the aquarium and I have no idea why she left or anything, but I couldn't imagine that working anyway. Even if she did stay here at the aquarium, it would be way too much, to do evaluation and program delivery and everything else that was on her plate.

LP: And she was getting her degree and really interested in evaluation. I remember earlier you said something about how the comparative studies were more time consuming and difficult. And I'm wondering what kind of expertise do you think someone or even an institution needs to have to be able to do evaluation well?

RB: I think they really need to understand statistics; they have to understand human behavior, and psychology, motivation, what motivates people. So I think there is a lot of social science that they have to understand. And then I think they have to be really good communicators. Is that what you're asking for?

LP: Yeah, just kind of the expertise you need to have to really conduct evaluations and do them well.

RB: I really do think that the communication skills are super important because you can have 2 people evaluate the program and come up with maybe even the same rating I would guess. And

they can present the information to you in 2 totally different ways—one that you would be really receptive and one where you would not be at all receptive. [RB and LP laugh] So you just have to make sure you remember who your client is. [RB and LP laugh]

LP: So that is interesting. So when you talk about communication and thinking about who the client is, how does your evaluator communicate results to the various stakeholders at Monterey Bay Aquarium?

RB: She would talk to anybody that I asked her to speak with and share evaluation results.

And we do have an in-house evaluator who does exhibit evaluation, and exit surveys and things like that. And they do marketing surveys. So they take care of that.

Chris [external evaluator] will speak with our in-house evaluation team and share with them what we're doing and what we're thinking about and what we've learned. So she has a really good professional relationship with that team as well. When she meets with us, usually what she'll do is she'll take a look - here is the data that comes in and sort of the first blush and she'll give us kind of a back of the envelope, kind of quick and dirty, 'This is what I think the data is probably telling me, but I'm not positive.' Just to give us a sense of what her gut reaction is. Then she'll go back and do a real thorough analysis and she'll write up a formal report for us. In some cases, she'll do the comparative, so she'll have, 'This is what happened this year as compared to the last couple of years.' Of course, the conversation with staff.

LP: Is Chris internal or is she external?

RB: Chris is external.

LP: And then you also have an internal team?

RB: Right. But they don't do any evaluation for the education programs.

LP: Does Chris do any evaluation outside of the education programs for Monterey Bay Aquarium?

RB: [seems to think for a moment] No, no, she doesn't.

LP: OK, I'm just curious, how was the decision made to have that kind of separate, where you have an external evaluator for the education programs but then in-house for some of the other evaluation needs within the aquarium?

RB: Well, education is a smaller department. [laughs] Our evaluation needs are fairly large in comparison to the size of the department. So marketing and exhibits, those are definite. If our marketing stuff doesn't work and our exhibits don't work, the aquarium is not going to work. So those are extremely high priorities for the whole institution in order to be successful. They've been doing evaluations ever since the doors opened. That's been just the culture of how we run business. When it was time to start really taking a look at evaluating education programs, the internal evaluators had a full load. They didn't have the time to add anything more to their workload. So if we wanted programs to be evaluated, then we needed to go outside.

LP: Ok. That's great. I'm curious- so it sounds like Chris works with you pretty closely. Do you do any evaluation in the education department independently of what Chris does with you guys?

RB: We'll do little satisfaction surveys—those things that I told you we should get away from. [RB laughs] We'll do those kinds of things internally, for like a teacher workshop, just to get some highlights from the teachers -- what worked, what didn't work. The kind of stuff that doesn't need in-depth analysis, where we just want to see whether or not we hit the mark on a one day event. So things that are small, one-off events that we probably won't be doing multiple times. We'll do some sort of evaluation just to get feedback from the participants.

LP: Ok, great. So I'm sorry I went off on a little bit of a tangent there because I was very interested in that area.

Another question for you, kind of switching gears a little bit. In what ways do you think technology could address some of the challenges faced in evaluation today?

RB: Well we do use SurveyMonkey a lot. And we use iPads and certain apps that kids can use to produce PSAs, or do an iMovie, or something that documents their learning or their ideas or their interpretation of what they've been learning. So technology can capture a lot. It's easy to scan through and annotate and do some comparisons with. So, I think you'd be foolish not to use technology.

LP: Ok great. You had mentioned developing authentic evaluation tools. Do you think technology has a role in those kinds of tools?

RB: Oh yeah, definitely. One of the things that we really are trying to do with kids and teachers is to get them to collaborate more, talk more and share ideas, to work together in learning communities. We're using some social networking software with our groups to enhance that collaboration and then also to monitor and to assess the levels and quality of the collaboration that's going on. I consider that a real authentic tool.

LP: Ok, great. I'm curious, so we've seen studies that talk about embedded assessments. When you think about the term 'embedded assessment' how does that compare with what you're calling authentic evaluation tools?

RB: I guess it could be the same. I think with authentic— I am just thinking that it's similar enough to what the participants would be doing as part of the program. So it wouldn't be like taking a standardized test. That would not be authentic because we don't do any studying for standardized tests as part of the program, so it doesn't fit. Whereas authentic would kind of fit in.

Let's say we're talking about doing field activities: if the participants went out and they did some data collection and then they presented their findings to the group as part of their field activity, then I think that would be authentic and it would probably also be embedded because it would be within the context of the program. So it would be like one of their assignments, one of the things they needed to do as part of the program. And then the staff could use it as an evaluation tool. They could actually go ahead and do a formal rating and all of that other stuff, or they could just use it as a general, 'Wow these people are really-, they really missed the mark. We need to go back and teach them, show them that, give them that experience over again.' You know, that kind of a thing. And I think we do that.

Especially our long-term programs, they all have performance opportunities, and maybe performance isn't the right word. But where the kids or the teachers are getting up and they're doing a presentation in front of the group or they're working together in teams and they're coming up with a team product or something along that line. So I would assume that's what embedded evaluation would be or embedded assessments.

LP: Yeah, that's a useful illustration and I can picture the, kind of performance-based activities that you are describing. So, we're curious about some of the financial support that evaluation gets in education. Do you know, in general terms, what percentage of funding goes towards evaluation? If it is integrated with the program or is it separate?

RB: Let me see, I can do a little quick calculation here for you. [pause and can hear clicking of keyboard keys]

RB: About 4% of my budget goes to evaluation.

LP: OK.

RB: But that's including my personnel budget. So if we were just talking about non-personnel costs, it's probably closer to, let me see, probably closer to 10%. Is that right? [more sound of clicking keys] Yeah, closer to 10%.

LP: Ok. And is your funding all through the Monterey Bay Aquarium itself or do you get any outside funding?

RB: Our business model is that programs--education programs, our conservation research and policy programs, and things like that--are all funded externally. So, the gate receipts take care of the operations side of the aquarium. But programs, we need to raise additional funds for. So we have a nice endowment that gives money to the department each year, which is really helpful. And then we also have money from grants and donors and things like that.

LP: I'm going to step back and have you give advice to someone who is new to evaluation in informal science education. What would you tell them?

RB: Somebody who is new to doing it or to being an evaluator? Or to being evaluated?

LP: I guess maybe both.

RB: OK. All right.

Well if they are, like in my position and running programs and the programs are being evaluated, number 1: do not take it personally. Remember that the evaluator is there to be your helper, and help you take a look at programs and make sure that they're running the best way that they can. And so, you know, the evaluator is not evaluating your staff or your people or you personally, but evaluating the program. Sometimes, programs are designed in ways that are not necessarily successful or sustainable and it's nice to have an outside evaluator who can be objective and point out those things that should be changed. So that's one thing. And then the other thing is, take advantage of their expertise. Ask lots of questions. Use them to help you develop programs and evaluations at the same time.

So, and then if you are a new evaluator, do your homework and make sure that you have a good understanding of what the client is looking for. And be kind. [laughs] The communication thing I think is really important. And be positive. And be objective.

LP: Great, great, and last question, kind of pie in the sky. If you could shoot forward 10 years, what is your ideal vision for what the state of evaluation would be at the Monterey Bay Aquarium?

RB: Well I think what I would hope is that we will have moved. We'll always have some new programs, or some tweaking, so we're always going to be doing some formative evaluation.

And that we'll have some well established programs, where the summative evaluation stuff is really consistent and we know that the programs are good and that they're doing what they're supposed to be doing.

But there will still be some summative evaluation going on, but we'll have some [areas] where programs are good, we're real solid, and we're able to move into more of a research format. And really look deeply into: 'What's happening? How are the programs impacting the individuals? [What are] the more long-term impacts? What's happening in the community? Are we having a bigger impact-, an impact on the community at large?'

I kind of see it as, when we first started out, we were mostly doing formative evaluation, and trying to figure out whether or not the programs were working. Then we moved to the point where we were doing more summative. It's sort of like, 'Okay, the program's working and yes, it is having an impact and it is having the desired impact.' Now, we want to find out, 'So what is the greater impact? Is there something more? Let's dig a little bit deeper, either long term, how is this playing out? Is it making a significant impact beyond just the individual kid, individual teacher? Is it somehow impacting the community at large?'

LP: That's great, that's great. Thank you so much, that is our last formal question.

[END INTERVIEW]