

## **MODULE 6**

### **Getting Results – Module Overview**

**Bransford:** In many ways, assessment drives everything else, so a way a lot of people will design is first, what do you want people to know and be able to do, and what do you want them to be identity-wise? Second, how will you know it when you see it? That's the assessment question. And then third, how do you design your instruction so that you can keep checking whether people are going in the direction that you originally thought they should go?

**WOMAN:** What do you think is worse-- the loss of customers or the loss of company resources affected?

**MAN:** Probably the loss of customers

**NARRATOR:** Assessment in Anita Gilkey's "Quality Manufacturing and Statistics" class includes questioning strategies that help gauge the existing knowledge of her students.<

**GILKEY:** What types of industries might be negatively affected by too much variation in their products or services?

**MAN:** The aerospace.

**GILKEY:** We ask questions that don't always necessarily have a right or wrong answer, but more cause the students to reflect on "why would this important"? The customer has expectations, and if you don't fall within those, you'll get one piece out of a hundred or two pieces out of a thousand that fail, and then they are suspect for the whole group, so then they have to shut the whole line down and it costs a great deal of money,

**GILKEY:** Yeah. I mean, if you're up in the sky, you do not want any of the parts failing.

**NARRATOR:** Observing his colleagues' classes helps course designer Jim Houdeshell plan to integrate more lab activities into the curriculum, where assessment strategies continue to be evaluated.

**GILKEY:** Anybody hungry this morning?

**HOUESHELL:** When you change to activity-based instruction, then the assessment method also has to change. And the assessment method needs to be matched to the level on the activity.

**GILKEY:** We've got two bags of Kisses placed at the scales. Record the total weight printed on the package, measure the mass of each Kiss, record your data on the data collection chart, add the individual weights of the Kisses to get the total weight for the bag, and record the total.

**MAN:** It said about 56. That's 48 and seven, so, yeah.

**MAN 2:** 55

**MAN 1:** They're off by one.

**MAN 2:** They shorted us one.

**MAN 1:** Yeah.

**GILKEY:** You'll collect the data, you'll analyze the data and determine how much variation is in your process.

**MAN:** Take all the Kisses out of the wrappers.

**HOUESHELL:** Part of what you have to do is, from an assessment standpoint, is determine are they stuck, or are they on the right path?

**MAN:** 467

**MAN 2:** Oh, this one's more.

**HOUESHELL:** Anita is looking for, um, how well they're following procedures that are laid out, looking at the discussion that they might have and any observation they might make on the variability that they're observing between the chocolate.

**GILKEY:** Okay, well, we're going to move over to the computers. I want to make sure that everyone has a chance to participate. I want to make sure that if I have someone who knows Excel and someone who doesn't know Excel, then they get the opportunity to do it also.

**HOUESHELL:** Anita's gone over with them and demonstrated at the computers how to calculate the descriptive statistics, which is an integral part.

**GILKEY:** Here I have my mean, my median, my mode.

**HOUESHELL:** And then what she's actually going to be looking for is the quality of the materials that they are producing.

**MAN:** 4.76, 4.68.

**MAN 2:** Recheck 11 and 19.

**MAN 1:** 47...

**GILKEY:** Don't forget that I have asked you to create a brief but informative presentation. Your teams are going to go over to the tables...

**HOUESHELL:** Students in groups have to make presentations all the time. Those are the core skills that are necessary within being successful as an employee.

**GILKEY:** We do have the rubrics that follow each activity In your book on page 42, here is an assessment sheet, and you're asked to use the following rubric to evaluate your performance.

**GILKEY:** It's really beyond just being able to work the problems. Do you understand why these measures are important and how you use these? How did you arrive at the consensus on how you would collect your data?

**MAN:** Simpler just to weigh just the chocolate, Because then you don't have to worry about messing up any of your calculations or anything to Did anyone think maybe your data might be more or less accurate by selecting that method also?

The data should be more accurate by measuring just the chocolate, because you're going to get a bigger deviation if you're only taking a sample of the wrappers and the tags.

**GILKEY:** All right, good. That's good.

**HOUESHELL:** I really appreciated her efforts to ask questions on the process they use as a team to come to the conclusions

**MAN:** Our median was actually the same as our mean, which is at 4.69.

**MAN 2:** With the differences, the deviation in there, the chocolate by weight was more than what it should have been per piece. That's why it was short one piece in the bag.

**GILKEY:** They demonstrate in class that either they get the concepts or they don't get them.

**GILKEY:** Okay, do any of your other team members have anything else to add?

**GILKEY:** I measure my performance by the performance of my students.

**GILKEY:** All right, well, thank you very much.

**BRANSFORD:** Pedagogical content knowledge is how knowledgeable am I about the learning of my students as opposed to just knowledgeable about my content itself And the more you know about your own content, often the further away you are from what your students understand, so the more I can create formative assessments daily, minutewise, every five minutes, whatever, that let me see what students are thinking, the more I can see... You know, I can be surprised and say, "Wow, they really got that "better than I ever would have thought, "I don't have to take more time on that, But boy, this is really problematic here." So, modeling that as a learner is another really important thing to do.

## **Module Six**

### **Getting Results – Assessing Performance**

**Helm:** Hi, Hilda.

**Hilda:** Hey.

**Helm:** What I like to do now is I like to inspect the machine to make sure that when you apply the power to it, that nothing is harmed.

**Hilda:** Okay.

**Helm:** Make sure you've plugged in everything correctly, so...

**Narrator:** Rudy Helms' one-on-one assessment method prepares students to become certified PC repair technicians.

**Helm:** We're going to go inside only enough to take the lid off.

**Helm:** A typical assessment might be to test and replace the power supply. They would remove the power supply, and they just replace it with the same power supply, but it simulates the actual replacement of a power supply.

The parts I'm concerned about are the parts that have electricity or that are supplying electricity.

**Hilda:** When you take apart a computer, you know, you'll also understand how to troubleshoot it. If you're just reading the manual, you know, you can read it through and it doesn't take very long, but for you to, um, really understand how, everything works, you know, that's... that's a good thing.

**Helm:** If I look along the bottom of the processor here and see that it's raised a little bit, not all the way down, that could be a potential problem, also. So I look for all these little pieces and everything's perfect so far.

**Hilda:** Okay

**Helm:** Also, when I come over to the drives, I like to make sure these molexes are nice and snug and that they're... they're snug here.

How does the computer work? How do... how does the hard drive spin? What's that sound, the click-click-click-click sound? Where's that come from? What's all that about? You know? What's... what are those colorful things inside the power supply?

What if somebody came up and just touched the motherboard? Would they get a shock, or is it dangerous to do this, or...?

**Villavecencio:** Oh, it's dangerous when the power is on, so we should... well, not really dangerous, but we don't want them doing that.

**Helm:** They write the procedures up. They're... I tell them what? I tell them I want this done. I want you to test and replace. Then they tell me in their portfolio step by step by step the process of doing that.

The RAM's installed? Another thing I like to do is I like to kind of lift the RAM up to see if it pops out. If the RAM pops out, then I know it wasn't installed all the way. So it's all secure, that's in right, that's down all the way. Fan's going to spin, all the wires are connected. So it looks like it's time to put the power to this. I think you did a really good job here.

## **Module Six**

### **Getting Results- Providing Immediate Feedback**

**Hollerin:** Everything on the test—everything—we've talked about and/or you've done in a lab or in the lecture, so you know it. You do know it. You just need to relax and work through it and you'll be fine.

**Narrator:** Kate Hollerin's hands-on mid-term exam provides students with immediate feedback for critical skills they will need to be successful in the course.

**Hollerin:** You come up, turn the photos over. Put them in appropriate order for seeing stereo, and call me over to check it off on your test.

Because our program is very hands-on and field oriented, we assess students based on their abilities to actually apply the skill or demonstrate the ability to use the piece of equipment.

Call me over when you're ready for me to look at it.

So in the aerial photo interpretation class, do they know how to set up a stereoscope and view the photos in three dimension? Aerial photo interpretation is using photos to navigate and to interpret something about the landscape without being in the landscape.

Very good.

And it is a basic skill that every natural resource technician has to have if they do field work because field work requires two tools: the map, so you know where you are on the ground, and the aerial photo so you can interpret some information without actually being there.

Now I want you to see if you can get that area in stereo.

I don't have to guess whether they understand because they're demonstrating they understand it. And if they don't get it the first test, we come back later on and they do it again, so we reassess until they can demonstrate it. And in the assessment, I stand with them while they set up the stereoscope and look at the photos and give me the feedback about what they're seeing there.

Remember the trick of using your fingers? Place one finger here and one finger on the same image on that photo, and pull them together so your fingers overlap.

What I'm doing ... as I assess them is I'm either recording it on an evaluation sheet or I'm recording it right on their test sheet.

Is that 3D? It looks like it should be. Perfect. Muy bien.

They get immediate feedback which I think is really important in an evaluation setting. Just remember that set-up. It's a little bit different under the next scope.

So that they go away knowing "This is something I'm strong in and I can grow on... I can build on that," or "This is something I have to work on."

I can tell just walking up here that it's right.

I know I reach a point where students have to use the information, it has to be real to them, they have to apply it to retain it, understand it and then be able to go out and act on it.

## **Module Six**

### **Getting Results – Utilizing Right and Wrong Answers**

**Koike:** I understand last week you took a test in... in this life support class, and what we'd like to do is conduct a review session based on some of your answers.

**Narrator:** Students in Bruce Koike's "Marine Life Support and Design" class work in groups to discuss both right and wrong answers from a recent exam.



**Koike:** Through testing, we find that certain concepts are not being really grasped, and of course that's the time to address that and spend a little time in... in review and hopefully it... it sticks once it's presented for a third or fourth time.

You'll be assigned or put into small groups. It could be a trio or a pair. The question will then be presented back to you.

The students haven't seen the results yet, and we'll be doing a group activity to go over questions that, um, some had difficulties with.

Meghan, why don't you move next to Erica? You guys work together. So work with your partner as to answering this question—again, true/false—and provide an illustration of chemical filtration off of a mechanical filter.

**Woman:** I was thinking of, uh, a bag filter... Uh, do you know what I'm talking about? Like, canister filters.

**Woman:** That hangs right off the pipe?

**Woman:** Yeah. You know they're pressurized. Like, the... they're in line with the systems. Like, the water would have to go in the top and then out the bottom and it's entirely closed, and a bag sock hangs in there....

**Woman:** Yeah, yeah, yeah.

**Woman:** And you fill that with charcoal and then it becomes chemical as well as being mechanical.

**Woman:** Okay.

**Woman:** If the filter's designed to be used as a mechanical filter, you wouldn't design a carbon filter to be used as a mechanical filter.

**Man:** Right.

**Woman:** That would be a chemical filter.

**Man:** Right.

**Woman:** So what mechanical filters would also do chemical filtration?

**Man:** I don't think mechanical filters would do chemical, but chemical can do mechanical.

**Woman:** Yeah. Yeah. So it... I'm thinking it's false. That's what I put on the test. What did you put?

**Koike:** There's two basic groups: those that got it right and those that... that did not. How many said "false"? What groups said "false"? Each group will have to focus on either the rationale that makes that the correct answer.

**Woman:** Chemical filtration occurs in carbon and ion exchange filters, which are always specifically designed to be chemical filters. So mechanical filters, um, wouldn't have those things in them and wouldn't be able to do chemical filtration.

**Koike:** Okay, how's that... how's that fit with the other individual... other... other groups' thoughts and justifications?

**Man:** One of the three methods of chemical filtration is adsorption which is an, uh, physically sieving the water which would be the same as most mechanical filters do to start with. Most mechanical ones are just the adsorption style.

**Koike:** Okay.

So we cover that concept, from what's right and what's wrong.

**Man:** And, well, the chemical had three components to it. There was adsorption, which is just the attraction, almost like a magnetic force attracts the particles to the media; the absorption which was the physical sieving; and the ion exchange where there's actually a change in the element structure that holds them together.

**Koike:** You have to do... be very reflective on, well, did the students learn that objective that you started out? Did they learn something else? Were there other benefits? How did you pull that lesson off, and if it wasn't as strong as you had hoped, you have to decide and strategize whether or not to modify it or scrap it or to change it to the betterment of the student.

Tell us why the average turnover rate is important for an aquarium system—when you design a system, why you want to know that piece of information.

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