chapter
TWO

Embracing Interactivity

Last chapter, we talked about different definitions for infrastructure and media that make up highly interactive virtual environments. Before going too much further, it is worth zooming out to define—no, to embrace—the concept of interactivity itself. Many conversations around interactivity in formal learning programs rest on the tools. Does WebEx allow polling? Can you have threaded conversations in the virtual world of ProtonMedia's *Protosphere*? What if you gave keypads to members of an audience? Those are all good questions.

But there is a much higher and more fundamental challenge. To successfully deploy HIVEs (and perhaps even to be successful with any educational program), we need to nurture *cultures* (and then skills sets) around *interactivity* that are independent of any technology. For example, in a true culture of interactivity, it is painful if anyone, including the instructor, carries on a monologue for long. The goal is always a conversation not a presentation (Feel free to insert your own "sage on the stage/guide on the side" cliché here, but I promise we will get more specific in this and subsequent chapters.) How many presentations have you attended where someone proclaimed his or her desire for an interactive session, only to talk for the next 55 minutes?

In a true culture of interactivity, the learning goals are not just the traditional "learning to know" type, but also "learning to be" and "learning to do." Students meet their needs to understand themselves better (including their role in the community and how to take advantage of their unique strengths) and to be able to do new things (such as being a leader or using project management skills), not just hear facts.

Enabling this sort of interactivity is challenging for an instructor (or a corporate manager or senate investigating committee, or . . .). To be successful, instructors have to give up control. They have to be less efficient with time in

the short term. They have to know more but say less, especially when students are flummoxed. They have to cover less ground but ultimately teach much more.

INTERACTIVITY LEVELS 0 THROUGH 6

For the vocabulary and expectations related to levels of interactivity, let's start with a linear rubric. It should be useful, in practice if not in theory, for all formal learning programs, including face-to-face and virtual. Like the Richter scale, it is logarithmic—each level is double the interactivity of the level before it.

Pre-Game Levels

Here are the early levels with minimum interactivity.

Level 0: In Level Naught, the instructor speaks regardless of the audience. This is the proverbial talking head, often supplemented with PowerPoint slides. Most books and some lectures fall in this level. The goal is to cover as many points as possible in the given time. Level 0 material is easiest to prepare for a novice instructor, or anyone with bombastic tendencies.

Level 1: In Level 1, the instructor pauses and asks single-answer questions of the students, such as "What is a dodecahedron?" When the question is correctly answered, the class continues. Many traditional e-learning courses fall here, as well as workbooks.

Level 2: Here, the instructor tests the audience and, depending on the collective response, skips ahead or backtracks. A good preacher might poll his or her audience ("Amen?") and, based on the enthusiasm of the response ("Amen!") or lack thereof ("Amen . . . "), decide to accept agreement and move on or to linger and make a case. This might require preparing three hours of material for a forty-five minute sermon. (For a military presentation, replace "Amen" with "Hoo-ah.")

Level 3: The instructor asks multiple-choice questions of the audience, and students may have the opportunity to defend different answers. Or the instructor asks real-time polling questions for data. Or an open-ended student chat room paralleling the presentation may periodically surface an issue that the instructor addresses. Asking students to use the "raise their hand" button to answer a polling question

is a Level-3 activity. Questions such as "How many people agree with . . . ?" "How many students would do A instead of B or C?" "Give an example of an onomatopoeia" or even "How many students think the weather is nice today?" get students used to engaging. Ideally, a synchronous (same-time) formal learning program should involve polling or other micro-engagements at least every 10 minutes. Most branching stories (simulations with multiple-choice decision points) also fall here.

Game Levels

Now, things get interesting. At Levels 4–6, the culture of interactivity changes the traditional teaching process.

Level 4: Students engage a lab or other process activity that typically has a single solution, such as putting together an engine, making muffins, or gerrymandering a district. Level 4 can also include minigames (15- to 60-minute online sims that require competency, successful understanding, use of a system, and encourage a limited amount of creativity). The role of the instructor is starting to be more coachlike.

Level 5: Students engage an open-ended lab or other activity and create unique content. Students can express individuality and cleverness that they may want to share and show off, often via screenshots in a chat room. However, *most* solutions will fall into fairly predictable patterns if the activity is done enough times (although there will always be some Mozarts that startle and impress). This level includes the analysis of case studies, the use of interactive spreadsheets (a type of mathematics-based simulation, such as running a liquor company, described later), practiceware sims (a flight-simulator), and the playing of most complex games, including real-time strategy (RTS) and tycoon games.

Level 6: Students engage in a long, open-ended activity, such as writing a story or creating and executing a plan. Where the class will end up is unpredictable, even after dozens or hundreds of iterations. At this level, the instructor is almost completely an enabler, a coach/facilitator, a resource, even a spectator. Students may use blogs and microcosms and engage multiday role-plays, including virtual-experience spaces to manage and host role-play artifacts.

Although the examples of the six levels use technology, this rubric can be applied in a traditional classroom. What's important is the culture of interactivity,

not the technology. For example, many of the Thiagi Group's training games (http://www.thiagi.com/games.html) will engage an audience without using much, if any, technology or even any consumables.

The implication is not that Level 6 should always be used. Ideally, most programs will start at Level 1 and then transition to Levels 3, 4, 5, or even 6 as quickly as possible.

Level 7 and Beyond Are there levels beyond 6? Sure. The manner of grading, the types of activities used, the chunking of the materials, and even the curricula itself can be directly impacted by the students.

Here is how Brock Dubbels[1] describes using a face-to-face simulation and developing a culture of interactivity in the classroom. He will begin talking about Level 6 and show how that can shift to Level 7

I teach fluid dynamics and aerodynamics to "at risk" high school kids. I try to appeal to the things that might be interesting.

I know if I talk about certain words too early like resistance, displacement, or friction, the students are going to check out. So what I say instead is "Next week I'm bringing in my wading pool. And we are setting up the first lake this school has ever had. And we are going to have a boat race. To win the boat race, you have to win in one of four categories: speed, weight-bearing, maneuverability, or general purpose."

The students get a general idea of what their goal is. But they also realize that they will need things that they don't currently have.

Then I ask the question, "If you were to learn about boat building, how would you like to do it?" I begin to elicit people's responses. This helps me get a sense of prior knowledge. By doing this I've accomplished building interactivity from the beginning, and I also start introducing the concept

[1]Dubbels is a middle-school teacher and instructional designer and also teaches a course called "Video Games as Tools for Educators" at the University of Minnesota. As a researcher, Brock is affiliated with the Center for Cognitive Sciences at the University of Minnesota, and specializes in reading comprehension, engagement, and exploring new technologies for assessment, delivering content, and investigating ways people approach learning.

of choice. Of course, from my perspective, all of the interactivity is prestructured. But the students don't know they're being shepherded. They just know that they're going to a better pasture.

Then I ask the question, "What would you build if you knew you couldn't fail?" This gets their imagination involved. This engages their ability to visualize.

Then we start building communities. I ask people to share "perfect world stories." For example, I might say, "If you are to build boats, and you are to have a race, and I will provide all of the materials for you, what would that look like? How would you build your boat? Are there other races you'd like to have?" We start tapping into the excitement.

Most people like the default model that I have up on the board. But there are always some people that won't engage unless they have some sense of choice. They won't engage unless they are heard. I look at these people as desperately wanting leadership, and not willing to involve themselves unless they have a leadership role. So, I try to get them into a leadership role as fast as possible. This is consistent with the research around affinity groups for communities of practice. The question is, how do you distribute leadership and not hoard it?

What we might do is write up on giant sheets of paper the various ideas, and give people votes. We can have the class control the experiment.

The nice thing about this phase is, if it is done right, it eliminates one of the biggest criticisms of any kind of formal learning, which is that it's not relevant and not interesting. The students can control both.

In some cases, the students can even determine how I am going to grade them. Generally they don't deviate very far from the guidelines I put up for them. But we are creating education that is co-created, not top-down or hierarchical. So we might have a wiki that explains the day-by-day curricula, and I give students the ability to change that up to the morning of that day's class.

INTERACTIVITY LEVELS AND LEADERSHIP MODELS

Given this focus on interactivity, including the taxonomy of levels to measure ourselves (and much more amusingly, our colleagues), some might ask, why is interactivity

with students so critical anyway? We may sense the value of interactivity intrinsically (it certainly matches our own best educational experiences), but how do we frame the extrinsic benefit? How can we justify our belief? Where's the beef?

The answer may best explained by leadership theory (Yukl 2002). As we increasingly understand, the level of interactivity used in a formal learning program directly affects the students' long-term relationship with the content. This is because the levels of interactivity correspond to specific leadership styles, which predict surprisingly well the subsequent effect on the so-called "target of influence" (in this case, the student).

At one extreme, interactivity levels 0 through 2 correspond to the three leadership styles of *pressure, legitimate authority,* and *directive.* The message communicated is "You will do this and do it now, because I can make you. If you don't, you will get in trouble, such as a failing grade or defenestration." At best, the leader—in this case the instructor—can gain short-term student compliance through these techniques. More likely, however, the student reaction is closer to *reactance*—instinctive emotional rejection of a situation where only one path is given and the target of influence has neither choice nor say.

By Level 6 (or 7 or 8) in our interactivity scale, the leadership style, formally defined, is *collaboration* and *participation.* It is more akin to the instructor saying, "I can't do this alone, and I need your help. In fact, I trust you to do it, and please let me know how I can help you." This is how one gains commitment and ownership in any leadership situation, especially teaching. The students both remember content longer and use it more.

Developing a culture of interactivity and using highly interactive virtual environments can be done separately. One is not necessary for the other. But the two together create the biggest intellectual payoff.