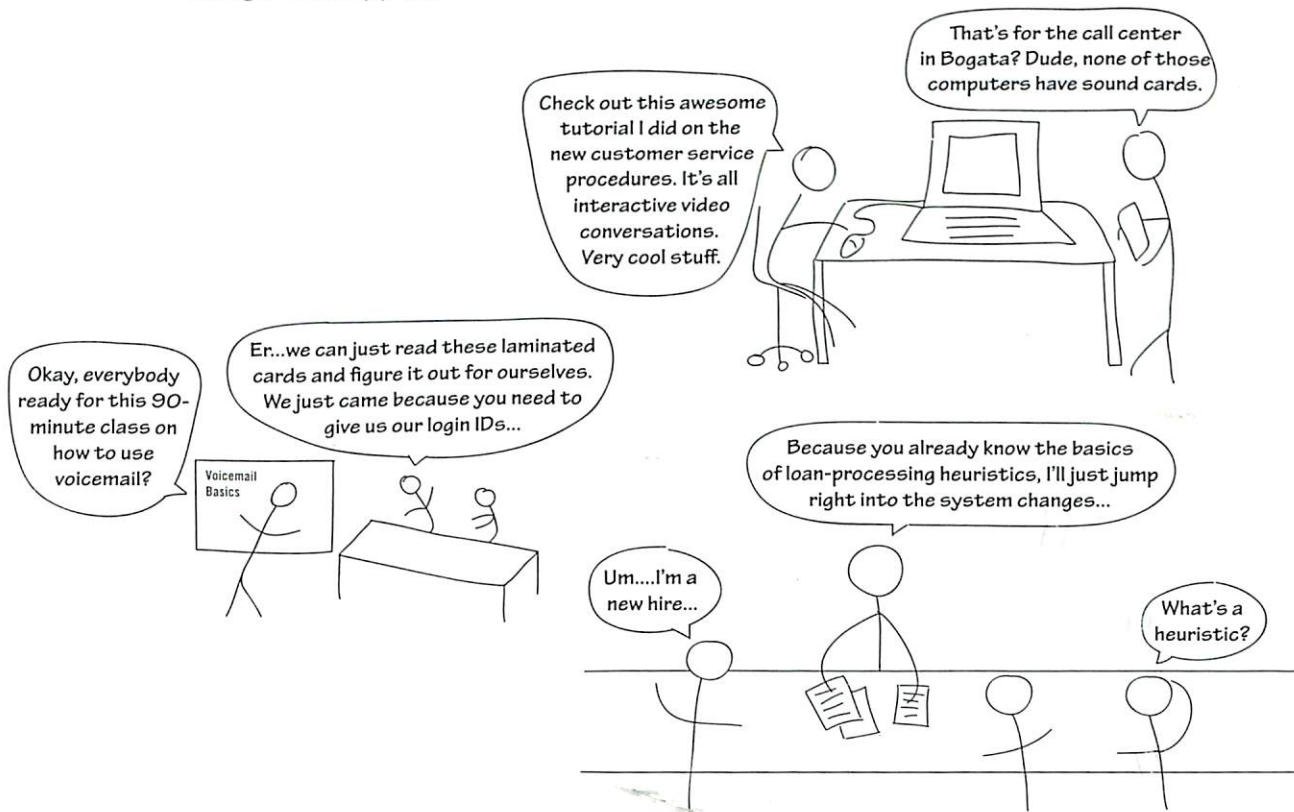


2

WHO ARE YOUR LEARNERS?

(IN WHICH WE LEARN THAT OUR LEARNERS ARE NOT NECESSARILY LIKE US, AND ALSO THE IMPORTANCE OF TIDY CLOSETS)

Understanding your learners is part of designing good learning experiences. If you don't understand your learners, unfortunate things can happen.



So what do you want to know about your users? First of all, you might want some basic demographic information (such as age, gender, job, or role). You can usually get that information via a survey, or sometimes organizations already have that kind of data on file.

You may also want to know things like their reading level or how they use technology, if those things are relevant to the subject you are working on. You can also use surveys to find those things out, or you can talk to some representative learners (which is always a good idea).

In addition to those types of audience demographics, you also want to get the answers to a few key questions:

- What do your learners *want*?
- What is their current skill level?
- How are your learners different from you?

We'll look at these questions in this chapter. Additionally, we'll take a look at learning styles, and also what methods you should use to gather the information you need to design learning for your audience.

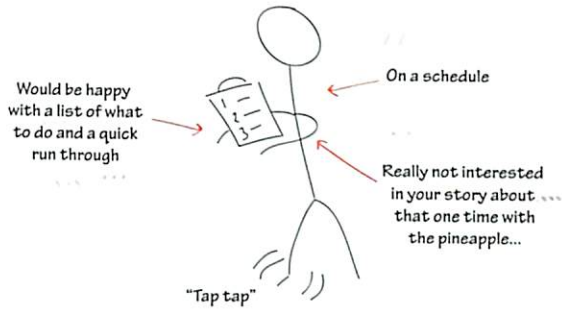
WHAT DO YOUR LEARNERS WANT?

Highly motivated learners will learn regardless of the quality of the learning experience. Similarly, unmotivated learners are a challenge even for the best teachers. But the more you can consider your learners' attitudes and motivations, the better you can tailor the learning experience.

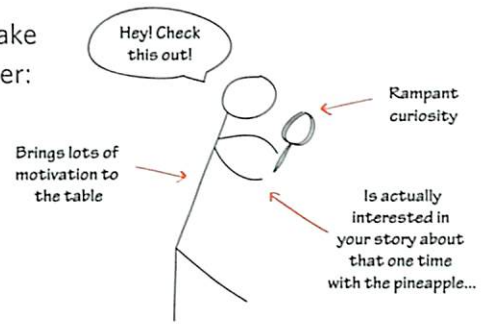
You want to consider the question of what your learners want from a few different angles. Think about why they are there, what they want to get out of the experience, what they *don't* want, and what they like (which may be different from what they want).

WHY ARE THEY THERE?

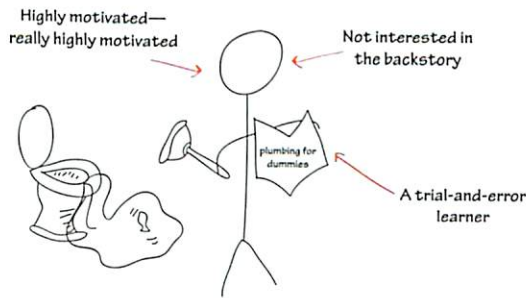
In considering the "why are they there?" questions, let's take a look at some of the types of learners you might encounter:



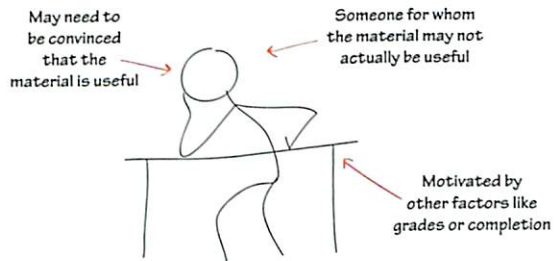
The "Just tell me what I need to know" learner



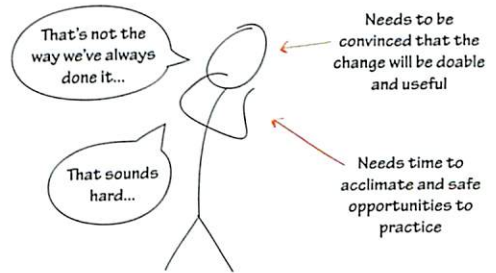
The "Hey! This is cool!" learner



The "I need to solve a problem" learner



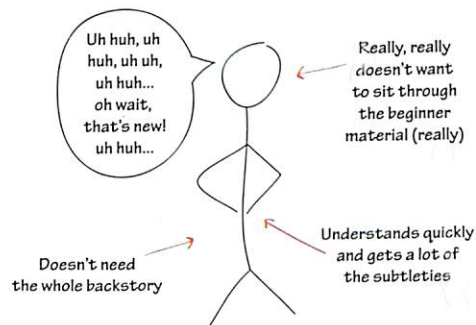
The "This is a required course" learner



The "I fear change" learner



The "Oooh, shiny!" learner



The "I pretty much know all of this already" learner

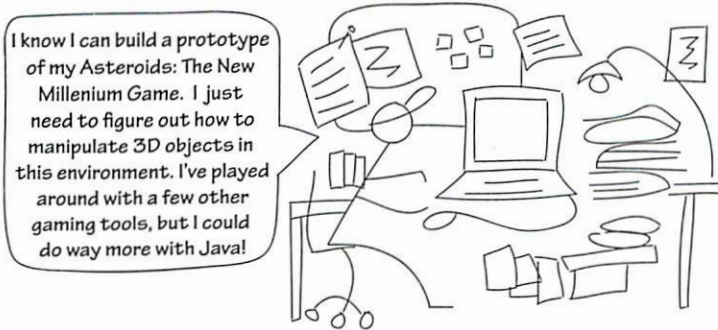
Which type are you? All of the above, most likely—depending on the subject matter and context. You’ve probably been all of these types at one time or another. You might have been a “required course” learner in math and a “hey, cool!” learner in music (or vice versa).

Ultimately, we are all the “What can I get from this?” learner. We want to know why a learning experience is useful or interesting to us. Regardless of type, people want to have purpose and be able to *do* something with what they are learning.

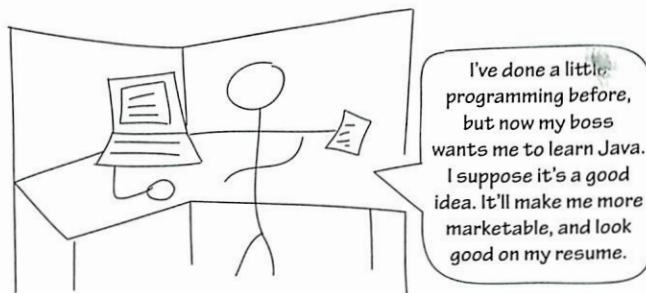
INTRINSIC VS. EXTRINSIC MOTIVATION

Let’s take a look at two people who are learning to program in Java. Pat is an **intrinsically** motivated learner, whereas Chris is **extrinsically** motivated.

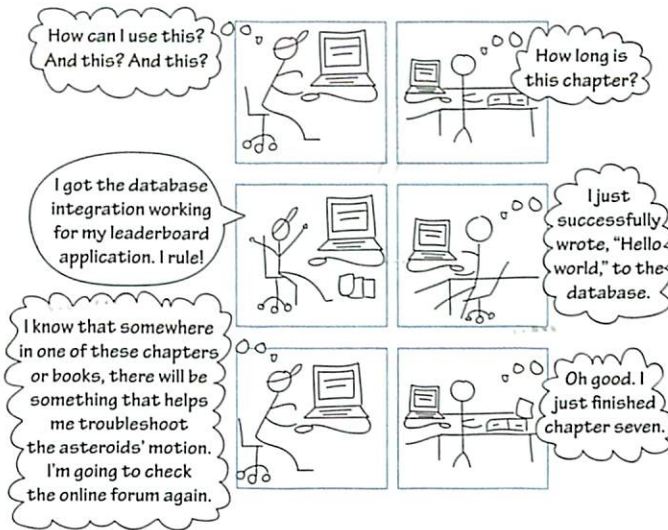
Intrinsically motivated learners are interested in the topic for its own sake, or have a specific problem they are trying to solve. Pat wants to use Java to *do* something specific.



Extrinsically motivated learners are motivated by an outside reward or punishment. Any kind of learning that is “required” is likely to be extrinsically motivated. Chris’s reasons for learning Java are very different.



As you might imagine, intrinsic motivation kicks extrinsic motivation’s ass.

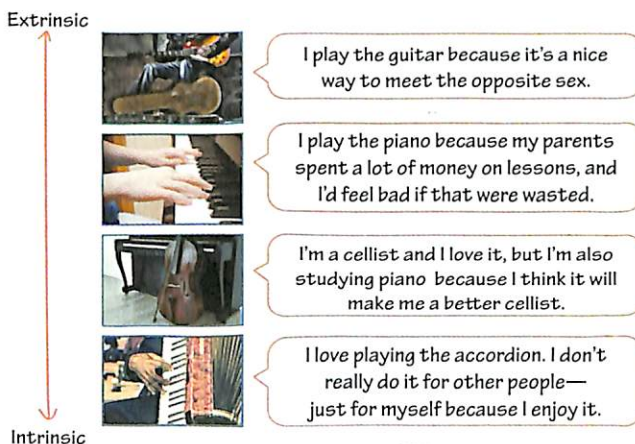


We know that any one person can be a different kind of learner, depending on the subject matter and context. In the same way, a learner's motivation can be intrinsic or extrinsic depending on the circumstances. For example, someone's motivation during the annual sexual harassment prevention seminar may be pretty extrinsic (it's required) but may become a lot more intrinsic later (when an employee comes to them with a sexual harassment complaint).

NOT ALL EXTRINSIC MOTIVATION IS CREATED EQUAL

Self-determination theory, conceived by the researchers Edward Deci and Richard Ryan, is probably the dominant model for motivation right now.

They talk about a continuum of motivation:



By their definitions, only the final motivation is intrinsic. Deci and Ryan associate intrinsic motivation with activities that are worth doing for their own sakes—things that are enjoyable or satisfying, even if there are no other people involved.

At the opposite end of the spectrum, fully extrinsic motivation is entirely external. People are only seeking a reward or avoiding a punishment.

In between, they list extrinsic reasons that have to do with our sense of social relatedness. This is when you do something because it will please other people, makes you feel part of a group, or supports your sense of identity.

Motivation is rarely all based on a single attribute, but is usually a combination of different variables. For example, I try to keep up with as much educational psychology research as I can, but when I first started trying to read research papers, I realized that my knowledge of research statistics wasn't very strong.

I've since become more knowledgeable about statistics, but not because I have an intrinsic interest in statistics. I've done it because it's necessary for me to feel like a competent professional and because I don't want to make embarrassing mistakes when I interpret data.

Fully external motivation often takes the form of either bribery or compulsion, and is therefore the least effective and durable form of motivation. As soon as the reward or punishment stops, so does the behavior, and people often resent being bribed or compelled, which can destroy any intrinsic motivation they might have had.

HOW DO YOU DEAL WITH EACH TYPE?

Depending on what type of learners you have, there are strategies that you can use to improve the learning experience.

Design strategies for teaching intrinsically motivated learners include:

- **Saying “Thank you” to the learning gods.** Seriously, your life is going to be much easier.
- **Making sure your learners have time to work on their own problems.** You may have some standard activities or challenges that everyone needs to do, but you will get a lot better mileage if learners are working on problems that are meaningful to them.

- **Leveraging your learners as teachers.** Intrinsically motivated learners are going to learn a lot on their own, and will learn even more if they share that knowledge. As they do so, it will expose other students to a wider variety of possible applications. It also takes the pressure off you to be the only source of information and energy, which means both you and your learners win.

Design strategies for teaching extrinsically motivated learners include:

- **Scouring their situation for intrinsic motivators.** Is there anything—*anything*—that they find intrinsically motivating about the subject matter? Ask lots of questions about what they might do with the information. Try to tie it back to relevant, real-world tasks or to their sense of identity as professionals.
- **Having them tell you.** Start with your learners telling you why a topic is useful or important. If you tell them, they may be resistant or skeptical, but if they come up with the reasons, they are likely to at least be a little more receptive.
- **Looking for pain points.** If your learners are unfamiliar with the material, they won't be able to make connections between their aggravations and the solutions you are offering, but if you can figure out what annoys them and show them how they can alleviate that annoyance, you can transform extrinsic into intrinsic in moments.
- **Avoiding extensive theory and background.** You may find that academic stuff fascinating, but extrinsically motivated learners would rather stab themselves in the eye with the free pen. Stick with specific examples and challenges that directly relate to real-life scenarios. In fact, this is usually true for *all* learners. If you've got a lot of backstory, and you can't say exactly why it's important, then you should cut it. Seriously—highlight and delete (or at least move it to the appendix or the resource section).
- **Using interesting hypothetical problems to awaken their intrinsic motivation.** If you start with a genuinely interesting challenge or puzzle that the learner needs to solve, their extrinsic motivation will start to drift toward a more intrinsic motivation, like puzzle-solving or accomplishing the challenge. Just keep in mind that when I say "interesting" I mean "interesting to them."

SCENARIO: INTRODUCING DRY MATERIAL

Here's an example of a design challenge for extrinsically motivated learners. Several years ago, I was looking at an elearning course designed for high school students to take online. The courses had lovely, flashy graphics and animation. I opened the first course, which was on statistics, and the first thing that happened was a very enthusiastic announcer saying, "Welcome to this course. Let's start with the....History...Of...Statistics!!"

How many high school students do you think are going to be intrinsically motivated by the history of statistics?



Yeah, not so much. In fact, it's safe to say that without the extrinsic rewards and punishments, they wouldn't be anywhere near this topic.

If you want to get a little intrinsic motivation from this bunch, how could you introduce the topic differently?

—TAKE A MOMENT TO CONSIDER WHAT YOU WOULD DO BEFORE MOVING ON—

Some possible ideas include:

- Use famous or controversial statistics (e.g., "50 percent of all marriages end in divorce") and have students research what those numbers really mean and how they are derived.
- Look at statistics that impact their lives (census data, school funding, etc.).
- Make it about money (that's always interesting).
- Have them decide which used car to buy based on statistical data. ■

YOUR LEARNERS WANT TO NOT FEEL STUPID

A few times over the years I've had this conversation with clients:

CLIENT: We want to do a basic overview for people. Essentially, we want to do "Our Topic for Dummies." But we can't say "dummies," of course. We can't suggest that people are dumb.

ME: I don't think people take it that way.

CLIENT: Regardless, we'll have to call it something else.

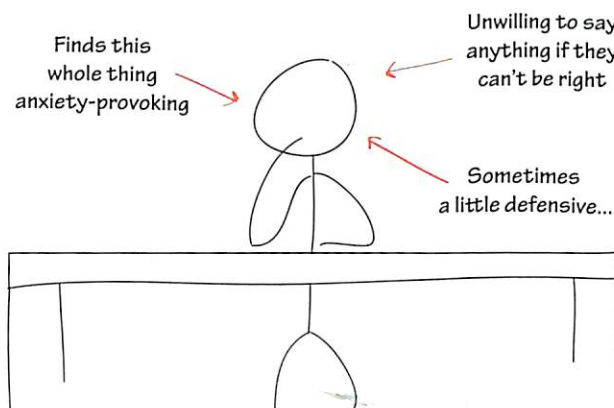
It's an interesting question, right? Why would anyone buy a book for "dummies"? Clearly, people do buy them, and it's probably not because they think they aren't smart.

I've always argued that the whole point of the dummy/complete idiot's/beginner's books is that instead of calling you dumb, their main selling point is that they promise *not* to make you feel stupid.

If I pick up a guide to wine that assumes I know the difference between a cabernet and a merlot, then I'm already feeling a little sheepish about my own ignorance. But suppose I pick up a book that doesn't assume I know the difference between Riesling and tap water. In this case, when I do know something, I can feel superior without risk.

A friend of mine is a game designer who is now designing elearning programs. When he talks about game design, he says, "My job as a game designer is to make the player feel smart." I think the same is true for learning designers. Your job is to make your learners feel smart, and, even more importantly, they should feel capable.

The "I don't want to feel stupid" learner



It's fine to challenge your learners—this isn't about making it easy for them. Things that are too easy can feel tedious and unsatisfying for learners. But you don't want to have your learners feel shame about what they do and don't know. Instead, you want to give your learners a safe path into the material.

Dan Meyer, a math teacher and blogger (<http://blog.mrmeyer.com>), describes the process he uses when introducing a problem to students:

We take guesses—What do you think? What do you know is a wrong answer? I'll ask a struggling learner for a wrong answer. Give me a number that's too high. Give me a number that's too low. I'm involving students at a very low investment that has a huge return.

Some ways to engage wary learners:

- **Leverage what they already know.** Can you take advantage of any knowledge they already have about the topic?
- **Give them some early success.** What can be something they can achieve early on? Is there some accomplishment that they can tackle with the material within the first lesson?
- **Give them some control.** Wary learners may feel like the learning experience is something they don't have any control over, so giving some control—for example, the ability to decide the order or pace of material—may help them feel more a part of the process.
- **Create safe places to fail.** Can they practice or self-assess in a private or non-judgmental environment?

If you do this well, then when they do start to succeed, your learners will feel like they *own* the subject matter. If you pull that off, then *you* win as the learning designer.

WHAT DO YOUR LEARNERS LIKE?

In addition to knowing what your learners want, you also want to ask what they like. My game-designer friend advocates finding out about your learners' preferences:

...You can see that if we are going to focus on developing software that our users want and like, it's essential that we know and understand our audience, not just the subject matter.

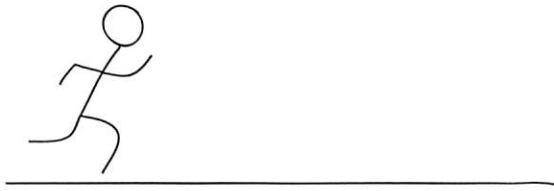
I would suggest that you research the brands, hobbies, and media (television, films, games, websites, etc.) that your target audience enjoys. This should give you a better idea of the aesthetics and interactions that your learners like and want. (Raymer 2011)

If you think about it, this makes perfect sense. If your audience loves basketball or knitting or opera or reality television, why wouldn't you want to utilize that to make your learning design more engaging for your learners? Obviously, your entire audience won't like exactly the same TV shows, but if you can find a common thread, you can use that in your design.

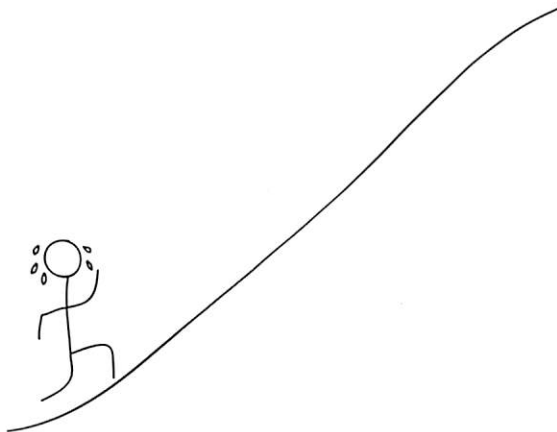
WHAT IS THEIR CURRENT SKILL LEVEL?

One of the things you need to consider when you are finding out about your learners is their current skill level. Basically, you want to know how steep the climb is going to be for them.

Are you asking your learners to do this?



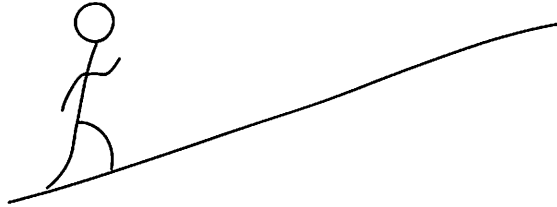
Or this?



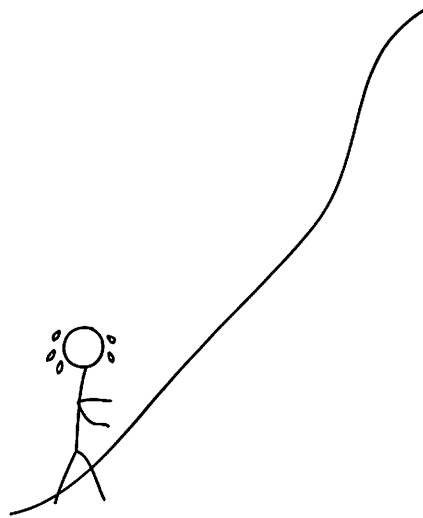
And how much of an effort are you asking your learners to make?

This question is complicated by the fact that while you have some control over the difficulty of the material, much of the outcome is determined not by your design but by the learners' ability.

For example, you may be building something that seems—to you—to function at a fairly reasonable level of effort.



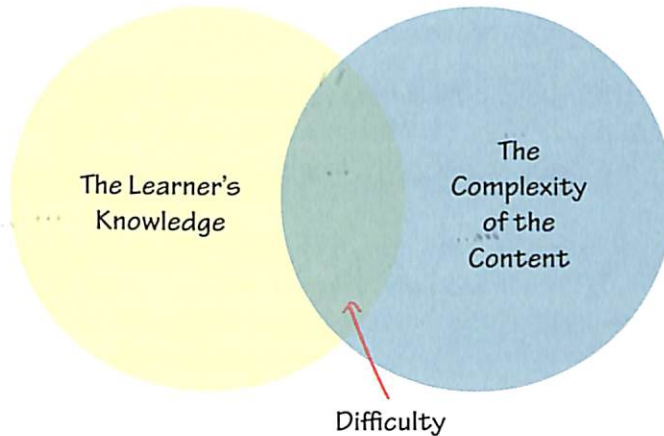
But to a complete novice, it feels pretty steep.



If someone is already an expert, then the material may require no effort at all.



The difficulty of a learning experience is actually a derived value based not only on the complexity of the content but also on the prior knowledge of the learner:



Let's say you're working with a novice jogger, a pretty good amateur runner, and an experienced professional marathoner. Each person would not only need a different *level* of instruction, but actually would need very different approaches.

For a novice jogger, the learning experience you need to provide would include:

- Lots of guidance
- A careful introduction that doesn't go too quickly in the beginning
- A structured experience that has immediate, achievable goals
- Strategies for increasing self-confidence
- A gradual progression of difficulty, with opportunities to rest
- Coaching and feedback on how they are doing

For a proficient recreational runner, you would include:

- Some practice of new concepts
- Advanced topic information
- Coaching and shaping for improvement of existing behaviors
- Much more autonomy

The expert marathoner would want:

- Somebody to hold out the bananas and water and then get the hell out of the way
- Really expert coaching
- Information about specific challenges (e.g., the characteristics of a particular route)
- Some help with measuring progress (mile marking, timekeeping, etc.)
- Full autonomy
- The opportunity to act as a resource by teaching or coaching others

Aside from the bananas, these characteristics hold true for almost any discipline. A more beginner audience needs a lot of structure and guidance, and a more advanced audience needs more autonomy and resources that they can choose to access as needed.

SOME LEARNERS ALREADY KNOW A LOT

We've already looked at the idea that the same content can look pretty steep to a novice but be more like this for an expert:

People are faster on the straightaways.



If somebody is already an expert, they can pretty much zoom along until they come to a gap in their knowledge or hit an unusual or novel concept or dilemma. Then they need to slow down and absorb the needed information or skill, and then they can be off and running again.

Unfortunately, a single learning design is frequently expected to accommodate many different levels of learners.

This means that all the things you built into the learner's journey to support novices (careful guidance, lots of practice, slowly helping them build their mental model before adding in content) are pretty much guaranteed to make the expert absolutely *nuts*.

This is the equivalent of being the experienced flyer standing in the TSA security line with your laptop out, liquids in a bag, shoes off, and carry-on ready to go, trapped behind what appears to be a grandma who hasn't flown since 1972 and an entire daycare of small children with all their associated paraphernalia.

Whole spectrums of learners frequently get shoved through the same learning experience for reasons of budget or convenience.

If that has to be the case, consider the following suggestions:

- **Don't make them hate you.** Don't make every part of the learning experience required for everybody. Just don't. Really. This means don't make people sit through classroom training they don't need—make parts of the classroom experience optional or take-home. This also means that you shouldn't lock down a menu in an elearning environment, forcing people to go through it in order or require them to wait until the entire audio narration has played before you let them advance to the next screen.
- **Consider pull versus push.** Novice learners frequently don't know what they don't know, but experts frequently have a pretty good idea. You can generally trust experts to get the information they need if you make sure that it's easily available and applicable.
Pull means you provide the resources, lessons, and reference materials and the learners choose when they need them. You want to make them as easy to find and as accessible as possible, but you don't need to force them through it.
- **Leverage their expertise.** These are smart people! Figure out ways to make use of that. Can they coach novices? Can they have special access to the course to add their own experiences and stories to make the course more vivid for novices? If you can figure out a way for them to use their expertise to enhance the journey for others (and learn a few things along the way), then they will have a whole different level of engagement with the material.
- **Embed some of the novice information.** If, for example, you're providing vocabulary for the more novice learners in an elearning program, make that vocabulary available by rolling over the word rather than spelling it out in the main content. That way, it's there if your novice needs it, but it doesn't slow down the more knowledgeable learners.
- **Let them test out (maybe).** One of the most common tactics for addressing varying difficulty levels is to say, "We'll have a pre-test! So if people really know the information, they don't have to take the course!" Here's the thing with this. This is a perfectly reasonable approach *if* you think you can create

a genuinely effective pre-test that measures knowledge or skill. Honestly, I've not seen that many good pre-tests. They tend to be either trivia questions or so easy that any reasonably astute person could guess their way through to a passing score. It's *hard* to write a good assessment. And if you are trying to assess a *skill*—something that had to be developed over time and through practice—well, how likely are you to be able to do that with something like a multiple-choice quiz?

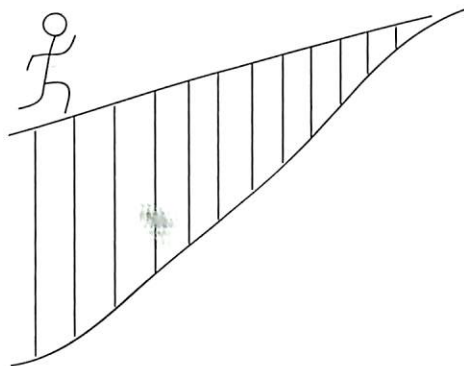
Skills can be assessed, but they usually need to be assessed through observation of competencies rather than multiple-choice tests (unless the competency you are assessing is the ability to take tests). One elearning professional I met at a conference has devised a method to evaluate the pre-test: He has a student who knows nothing about the content take the test. If they score above 40%, he knows that the test isn't really assessing the material.

- **Ask “Do you need anything?” and then get out of their way.** If you are supporting an expert marathoner, you don't say, “Hey, let's wait for some of the newer folks to catch up” or “Have you seen this brochure on ways to motivate your training regimen?” Instead, you say, “Need anything? Banana? Water? No? OK—see you at the next mile marker then!” The same goes for learning resources: Figure out what they need, make sure they have access, and then stop bothering them.

SCAFFOLD THE INCLINE

What if the topic is too complicated for novice learners to really tackle without hopelessly oversimplifying the content? What if putting the content into a realistic context means that context is overwhelming to the user? Try scaffolding.

SCAFFOLDING: Build supports to make the learning incline less steep. Then gradually reduce those supports until learners can handle the incline on their own.



Good scaffolding acts like training wheels; it allows learners to accomplish the difficult task in a safely supported way. Ideally, it doesn't reduce learners to bystanders but gives them the support they need to complete tasks they wouldn't otherwise be able to do.

Examples of ways to scaffold:

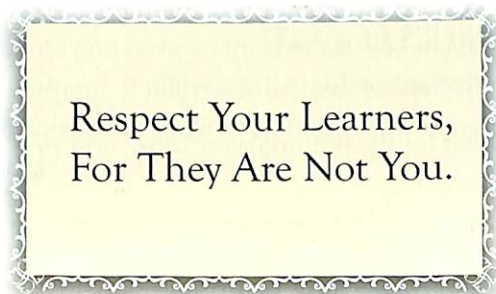
- **Reduce the complexity of the environment.** Let's say you want to use an elearning simulation to teach someone about the controls in a plane cockpit, but it's too overwhelming for a novice learner. To scaffold their learning experience, you could fade out all but a few of the key controls for the first few scenarios, and then gradually add controls back in as the learner becomes more proficient and competent.
- **Use walkthroughs.** Have the learner go through the whole process with a simplified case. For example, if you want to teach students about the scientific research process, have them work through a very simple research problem with step-by-step guidance and pretty obvious results, and then move on to more complex cases.

Another example: I once created a fairly complicated environment for salespeople to learn a specific sales process by selling technical products to several virtual customers. Their very first scenario was a short and slightly silly example where they sold snowsuits in Hawaii, which gave them the opportunity to learn the interface and the sales process without worrying about the technical content right away.

- **Provide supports.** If possible, embed easily accessed references in the experience. For example, have samples, definitions, or help documentation right at hand so the learners can have the support they need while in the midst of trying to accomplish the task.

HOW ARE YOUR LEARNERS DIFFERENT FROM YOU?

The first thing you need to know is:



Seriously, I'm getting this made up as a bumper sticker. It's one of the most important things you can remember.

Let me give you an example. Several years ago I was reading an article about different work styles, and the article categorized people into four broad types, with questions to help you identify your own type.

I was reading the description of my type and nodding a fair bit. My type enjoys problem-solving? Absolutely. Yep, I like new challenges. Yes, the opportunity to learn new things *was* a good motivational reward for me.

And then I stopped.

And I looked at the other three types, while one of those cartoon light bulbs was going off over my head. I love learning new things (it's how I wound up in instructional design), *but not everybody feels the same way.*

This should not have been news to me, but it was. You mean there are people who are mostly comfortable with the safe and familiar? People for whom learning something new is scary or uncomfortable? Or people who primarily regard it as a nuisance, or a necessary evil to be dispensed with or circumvented as quickly possible? Really?

Whoa.

I was seriously ashamed of myself—I had been subconsciously assuming that my experience was the norm. Quite possibly you've never shared that particular blind spot, but everyone inevitably thinks about teaching through the filter of their own experience. What learning experiences were effective for you? How do you like to learn? Surely other people would also like to learn in similar ways, right?

That's mostly right, actually, but it's important to keep in mind that not everybody will have the same focus and motivation. Also, your learner does not see the world the same way you do.

WHAT IS YOUR LEARNER'S CONTEXT?

Consider your learner's context for the material.

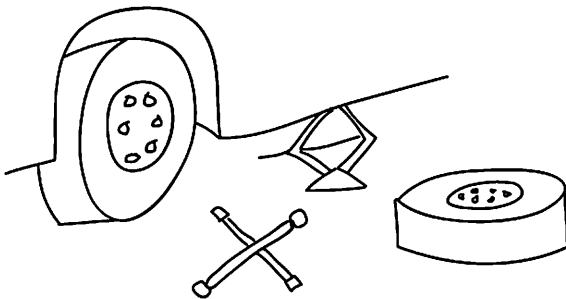
You have a lot of context for the material you know, and your learners frequently have quite a bit less context.

Read the following paragraph:

First, you will need to provide support above the usual level. If you do not have a device for this elevation, you will need to obtain one. Before you provide the elevation support, you will want to decrease the later resistance for all the critical contact points. After the elevation device has been utilized, you can complete the rotation of the critical contact points, and exchange the impacted element. You will then want to re-engage the critical contact points and remove the device. You may continue to use the replacement element. If it is not adequate for long-term use, you may want to repair or replace the original element, at which point you will need to repeat the process.

Was it difficult to follow? Did you have to force yourself to concentrate to understand or process what was being said?

OK, now try this version. Take a look at this picture and then read the paragraph again.



First, you will need to provide support above the usual level. If you do not have a device for this elevation, you will need to obtain one. Before you provide the elevation support, you will want to decrease the later resistance for all the critical contact points. After the elevation device has been utilized, you can complete the rotation of the critical contact points, and exchange the impacted element. You will then want to re-engage the critical contact points and remove the device. You may continue to use the replacement element. If it is not adequate for long-term use, you may want to repair or replace the original element, at which point you will need to repeat the process.

Did it make more sense the second time around?

The tire-changing example was based on an experiment (Bransford 1972). They also used a similar example where the task was doing laundry, and they had three groups:

- A group that was told it was laundry before they read the paragraph
- A group that was not told the example referred to laundry
- A group that was told that it was laundry only after they'd read the paragraph

Unsurprisingly, the group that understood and remembered the most was the group that knew what the example was about before they read the paragraph. They were able to understand and retain the information specifically because they already had a mental picture about laundry that they were able to use to parse the information.

This is important to keep in mind because whenever you have a lot of knowledge about something, you have a picture in your mind, and your learners may not.

HOW MUCH YOU KNOW VS. HOW MUCH THEY KNOW

Let's say you are teaching an introductory course on something you know a lot about. But of course you can't talk to a novice audience the same way you'd talk to a colleague. So what's the bigger barrier? Is it how much they know (not much)? Or is it how much you know (a lot)?

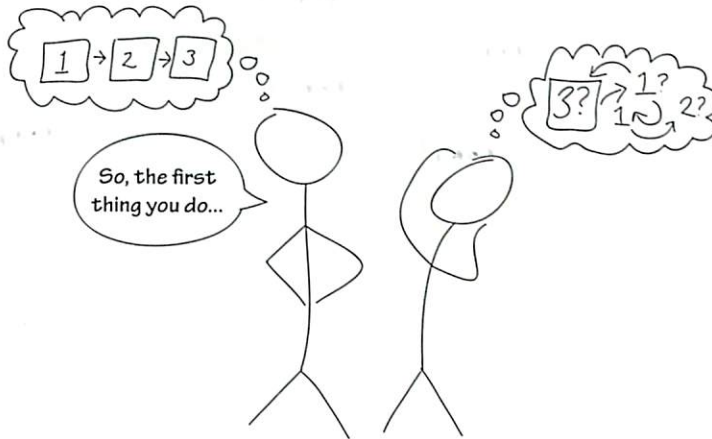
Well, sometimes the barrier genuinely is how little your learner knows:

Okay, mom, first you need to right-click on the file...uh-huh. That means use the other button on the mouse, that's right... no, you don't need to double-click. A single click is fine.



OK...OK...now select the option that says "attach." Did that work? What do you mean, "how can you tell"? The menu just disappeared? OK (sigh), let's start again...

But just as often the barrier is how much you know and—more importantly—how hard it is for you to remember what it was like *not* to know it. Have you ever had somebody explain something technical or complicated and just not been able to follow what they were telling you? If so, you know that you don't want your learners to experience that.



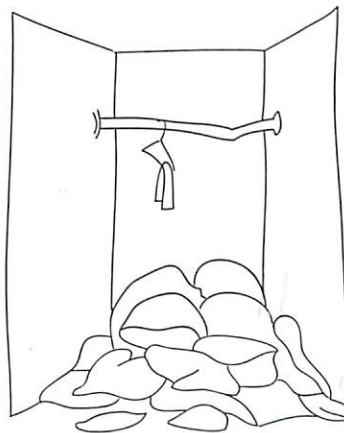
It can sometimes be hard to avoid, because of the way we mentally organize information.

WHY YOUR BRAIN IS LIKE A CLOSET

Think about a subject in which you have expertise. What kind of mental model do you have?



Is your understanding and organization of the subject like this?



Or is it more like this?

If you are the expert, it's likely that you have the first kind of mental model—pretty orderly, with a lot of different categories, distinctions, and a sophisticated way of organizing the information. If you are the novice, you have a lot less structure around your limited information.

If somebody hands an expert a blue sweater to put in the closet, that expert will be able to decide pretty quickly where to put that sweater because they already have a structure in place (on the sweater shelf, next to other winter clothing, ordered by weight or style or even color).

But when you hand content to a novice learner, that person is likely to look perplexedly at the piece of information that they have no context for, shrug, and toss it onto the pile of other information accumulating on the floor of their closet. We've all had those training experiences where you get a flood of information and all you can do is try to keep up.



The bigger problem comes when you want someone to *retrieve* the information. As the expert, you have all sorts of ways to pull out a particular piece of information—you can check sweaters, check winter clothing, check casual wear, or check things that are blue. At the same time, your learner is pawing randomly through their pile, with no other strategy than to try really hard to remember.

HOW DO YOU HELP NOVICES STRUCTURE THEIR CLOSETS?

The first thing you need to do is help your learners build a few shelves.

There's no way that any single class or training program is going to get them all the way to your mental model, and you shouldn't try (that's just as bad as burying them under a flood of multi-colored laundry). But you can definitely provide some context for the information that you are going to give them.

Here are a few ways to help your learners build shelves: ...

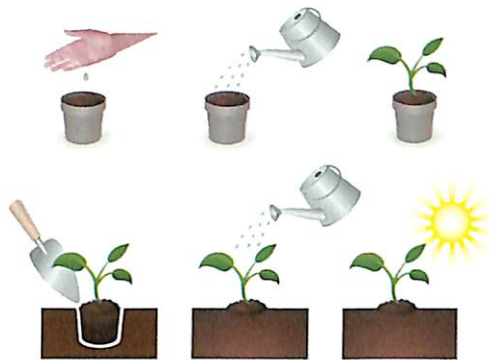
Use a high-level organizer. Start them with some structure that will help them organize what follows. This could be a road map of the broad categories, an overview of the basic principles, or an acronym or a mnemonic device. This gives them some shelves on which to start putting information.

BNICE: 5 Types of Terrorist Weapons

- Biological
- Nuclear
- Incendiary
- Chemical
- Explosive



Use visuals. Visual information contains several extra cues that give your learner more hooks for storing and retrieving the information.



Use a story. People have amazingly sticky memories for well-told stories, particularly ones that arouse emotions.



Work through problems. One way experts categorize information is by how they can use it to solve a problem (that is, how they can apply it). Working through problems helps novices start developing their own similar structure.

Have learners design shelves. Give learners the information as a specific task, and have them decide how it should be organized. Ask them how they would present it if they had to teach it to others. You can then have them compare their organization to the expert view and let them think about what they would do differently in the future.

Use a metaphor or an analogy. Compare the relevant subject matter to something that your learners are already familiar with so that you can leverage the storage and retrieval capability of one of their existing mental models. It's frequently a good idea to use something common and everyday that the learner can't help but be familiar with, like, oh, say—a closet.

It's worth mentioning that although it's more common to have experts teaching novice learners, that's not always the case. Sometimes experts teach other experts, or, most difficult, an expert is teaching an audience of widely mixed levels of expertise.

As mentioned, people who already have a lot of expertise really don't need a lot of setup—they know where the blue sweater goes and just want to get on with it.

Learning experiences for people who already have a lot of expertise should be efficient and should be more "pull" than "push." Let them decide when they need it and how much.

Whenever possible, you want to make sure that a knowledgeable person has a fast-forward lane, so they can get the necessary information without having to wade through all the material they already know.

THE EXPERIENCE FILTER

All learners, both novice and expert, filter their new learning through their past experience. Humans are sense-making animals. We will try to interpret and make explanations for things we don't understand.



This is OK, and a perfectly normal part of learning. Everyone's understanding is colored by previous experience, and therefore everybody's understanding of the same material will be a bit different.

Sometimes, though, that can lead to critical misconceptions, as here:

BARISTA-IN-TRAINING: This customer wants one of the St. Patrick's Day Peppermint Wasabi Double Espressos, and he's paying with a credit card. I haven't done a credit card yet.

EXPERIENCED BARISTA: (thinks "OK, he's the first one today to order that disgusting seasonal specialty") OK, mark it as a specialty order, and I'll show you how to run the credit card.

Hours later...

EXPERIENCED BARISTA: (checking receipts) What the hell? 107 specialty orders? Is that right?

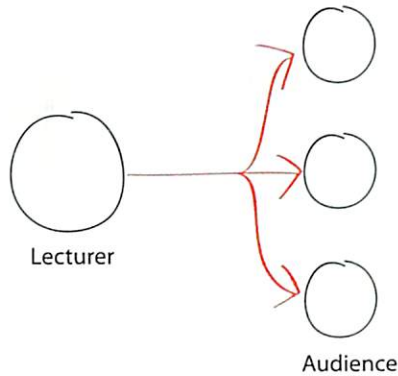
BARISTA-IN-TRAINING: I think so—a lot of people paid with credit cards today.

HOW CAN YOU KNOW WHAT YOUR LEARNERS ARE THINKING?

Unless you can read minds, you need to make sure the information flows both ways.

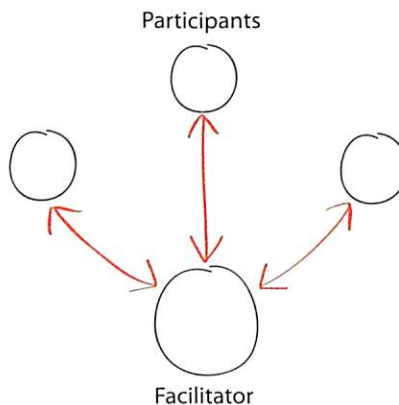
The traditional lecture classroom is probably the most common, familiar model that people recognize for how learning works: The teacher pours information into the heads of learners.

The problem with this is that the information is flowing in only one direction.



A lecturer could talk for days and not have any idea what misconceptions his or her students might have. Eventually, in traditional classrooms, misconceptions may turn up on an assignment, but only long after the information has settled into the learner's mind and the ideal opportunity to correct the misconception has passed.

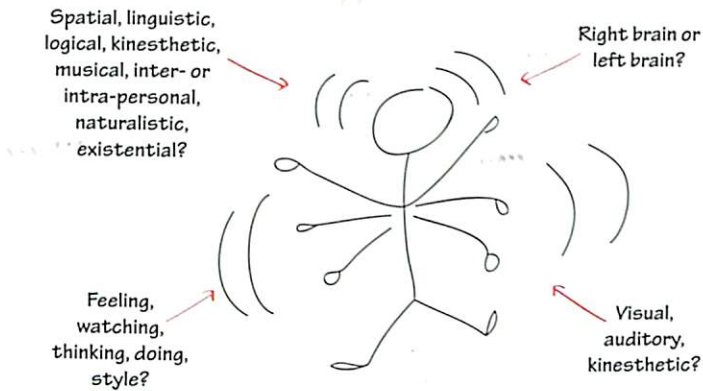
A better model is an interactive one that has information flowing in both directions:



Regardless of the learning venue (classroom, elearning, informational website), it's best to have as interactive an experience as possible. Ideally, you would construct opportunities to see how your learners are interpreting and applying what they learn, so you can correct misconceptions, extend their understanding, and identify ways to reinforce the learning.

LEARNING STYLES

But wait, what about the “I’m an auditory, visual, tactile, kinesthetic, conceptual, social” learner? Don’t we also want to know our audience’s learning styles?



Maybe you are familiar with the concept of learning styles. For example, you’ve probably heard of someone being described as a “visual learner.”

Basically, the idea espoused by learning-style advocates was that if we could identify individual differences in how people learn, we could provide them with learning experiences that best match their learning styles and improve learning outcomes.

There are many intelligence- or learning-style inventories. Here are a few of the more prominent ones:

- Gardner’s Multiple Intelligences—Howard Gardner proposes that people have different kinds of intelligences (spatial, linguistic, logical, kinesthetic, musical, interpersonal, intrapersonal, naturalistic, and existential) rather than a single type of IQ (intelligence quotient).
- VAK or VARK—This model proposes that people have inclinations toward learning styles, such as visual, auditory, reading, or kinesthetic learning.
- Kolb’s Learning Styles Inventory—David A. Kolb proposes a set of learning styles (converger, diverger, assimilator, and accommodator) based on preferences for abstract versus concrete and active versus reflective learning.

WHAT CAN I DO WITH LEARNING STYLES?

Not much. Sorry, but the scientific evidence of effective use of learning styles is pretty weak (at the time of the writing of this book). There are a couple of

assumptions that can't really be proved: first, that somebody's learning style can easily be measured, and second, that there is a practical way to adapt the learning experience to those styles. Technology may solve this problem eventually, but for now we don't really have effective examples of this.

I bring this up because learning styles are pretty popular, but they haven't proven to be very effective. That may change in the future as people investigate better ways to assess and apply learning styles.

Still, all is not lost; there are some useful ideas you *can* get from the learning styles conversation:

- **Not everyone learns the same way.** Even if you can't adapt a learning situation to someone's unique learning style, you can create learning experiences that incorporate a variety of approaches. This also helps keep a learning experience interesting and provides a variety of memory triggers. Varying the learning styles also battles against people's tendency toward habituation (more on this later).
- **There are different kinds of intelligence.** I used to teach art students, and they loved learning about multiple intelligences because it validated their skills and abilities that fell outside the traditional definition of IQ.
- **We are more alike than we are different.** Excepting certain physical impairments, we all learn from visual, auditory, and kinesthetic methods, and we have all the different types of intelligence at varying levels.
- **You may want to vary the learning approach depending on the subject being learned.** Although there is little evidence to support customizing learning to a particular learner's style, there is some evidence that suggests that you should adapt the learning approach to the content being taught. At a minimum, use common sense to match the approach to the task. You wouldn't want your car mechanic trained via audiobook, right?

METHODS FOR LEARNING ABOUT YOUR LEARNERS

So how do you find out about your learners? There are several good books on the topic of analysis for instructional design (start with Allison Rossett's *First Things Fast*), and there's a lot to be learned from the field of user experience about how to research your audience.

I'm not going to get into a lot of detail about this, but here are a few key practices that I believe are crucial for good audience analysis:

- Talk to your learners
- Follow your learners around
- Try stuff out with your learners

TALK TO YOUR LEARNERS

This may sound unbelievably obvious, but in my experience, a lot of learning gets designed without talking to learners. As an instructional designer, I've had a number of projects where I talk to project stakeholders, to trainers, to managers, and to subject matter experts. Unless I insist on it, I rarely get to talk to the actual learners. To be fair, most of these experts have a lot of experience with the subject matter and with the learners, so they are great sources of information, but they also have pretty sophisticated closets. You should talk to all of those people *and* you should talk to your learners.

Here are a few reasons why:

- **They will tell you how it works, not how it should work.** Stakeholders, managers, and experts are often very vested in the "right" way to do something. They'll tell you how the manual says to do it, but your learners will frequently tell you what happens in the real world. In theory, loan-closing requests are scheduled "by the book," but actually the customer service people use a particular shortcut. In theory, programmers write their own subroutine for a particular function, but really everyone goes to the same open-source code site and copies the free code that's posted there. You may still need to teach the official version, but you can create better scenarios and support materials if you know how it really happens.
- **They can tell you where it hurts.** Your best friend when designing learning is someone who is currently learning the topic or has just recently learned it. They are very clear on what was confusing or difficult. They can tell you what made sense to them, what was easy, and what they are still struggling with.
- **They can give you examples and context.** Learners' comments, complaints, suggestions, and ideas can give you all the little details necessary to create really good learning scenarios. Your experts can sometimes do this as well, but sometimes their examples get a little out of date, whereas your current learners frequently know what the current challenges are.

Some questions you should ask learners:

- Why are you learning this?
- How will learning this help you (how are they motivated)?
- What are the biggest hassles or challenges you experience (in relation to the topic)?
- What are some examples of when you've had problems?
- What was the hardest thing for you to learn?
- What were the easy parts?
- What could make it easier for you?
- How do you use this information now?
- What do you wish you had known when you first started?
- Can you walk me through it?
- What does a typical example look like?
- What crazy exceptions have you seen?

FOLLOW YOUR LEARNERS AROUND

Sometimes this important process is called job shadowing, and in the user experience community it's often referred to as contextual inquiry, but it basically amounts to following your learners around in their actual environment.

This is not focus groups, email surveys, or phone interviews. This is face-to-face in the environment where they will be using the learning. Could be an office, a factory, their computer setup in their den—wherever. If you can do only one type of audience analysis, do this (you can always ask your questions along the way).

Why is following your learners around important?

- **Context, context, context.** You want your learning to create contextual triggers that will allow learners to remember things later. We'll talk more about this in Chapter 4, but people remember more in a similar environment than they do in a dissimilar environment, and the more context (visual or situational) that you can leverage, the better people will remember.
- **Even new learners have started to build some shelves.** Even if you are talking to new learners, they've already started to develop their closets, which means that they've probably already automated some of the steps in their brains. If you're asking them about what they do, they are already starting to gloss over details, but if you watch them in their actual environments, you see what's happening and can stop and get more information; for example, "Can you tell me more about that step you just did?"

- **Juicy details.** If you are trying to create good examples or scenarios for learning, you can get the best details from seeing people in their actual environments. If you know about their world, you can much more easily create better examples, scenarios, and activities.

TRY STUFF OUT WITH YOUR LEARNERS

Frequently, analysis gets done, and then the learning designer goes away and designs the learning and it gets distributed to the learners. If someone is teaching face to face, they get a decent amount of feedback in the process of teaching the class. If the learning is delivered by other people, or if it is elearning, sometimes very little feedback reaches the learning designer.

Try stuff out with your learners along the way. If you have an idea for an activity, get a few people to try it out. Create prototypes, do user testing, run pilot tests.

This is not the same thing as showing it to someone and getting their feedback. Getting people to review your materials can be useful, but everyone fills in the gaps with their own understanding. Nothing will show up gaps like trying stuff out. Have a quick and dirty test of a lesson or an activity. Watch users try an elearning program. Do a pilot of a class with a small sympathetic audience.

Are there parts where people get confused? Do certain parts drag? Do you find yourself talking for a long time in the middle? Was your test audience confused by the instructions for an activity? Testing your learning design early and often will allow you to fix these things before you get in front of your official learners. All the learning theory in the world won't help you as much as testing your learning designs and fixing the problems.

There are a few reasons why this is important:

- **You think you are being clear, but you know how it's supposed to work.** Anyone who designs anything gets a certain amount of tunnel vision. If you try things out, you can find out what does and doesn't make sense to a learner before you've invested too much time and effort into what might be a wrong direction.
- **You'll get good ideas.** You'll think of all sorts of good ways to refine the design that you could never have come up with in a vacuum.
- **It's more efficient in the end.** If you regularly try things out, you can do lean versions and just fill in where there are issues. This means you can create much shorter, more efficient lessons than if you try to guess what your audience knows.



SUMMARY

- You want to know about your learners—not just about their demographics, but about their motivation, likes and dislikes, skill level, and ways of understanding the world.
- Provide more structure for your new learners, and more resources and autonomy for your experienced learners.
- Don't just hand your learners information, but instead help them construct and organize their framework for that information.
- Learning experiences should be two-way interactions, so you know when learners understand correctly and when they don't.
- All of the theory in the world won't help you as much as spending time in your learners' world, and testing your designs early and often.

REFERENCES

- Bransford, J.D. and M. K. Johnson. 1972. "Contextual Prerequisites for Understanding: Some Investigations of Comprehension and Recall." *Journal of Verbal Learning and Verbal Behavior* 11: 717-726.
- Chi, M. T. H., P. Feltovich, and R. Glaser. 1981. "Categorization and Representation of Physics Problems by Experts and Novices." *Cognitive Science* 5: 121-152.
- Coffield, F., D. Moseley, E. Hall, and K. Ecclestone. 2004. *Learning Styles and Pedagogy in Post-16 Learning: A Systematic and Critical Review*. London: Learning and Skills Research Centre.
- Deci, E. L., and R. M. Ryan. 1985. *Intrinsic Motivation and Self-Determination in Human Behavior*. New York: Plenum.
- Fleming, N.D. and C. Mills. 1992. "Not Another Inventory, Rather a Catalyst for Reflection." *To Improve the Academy* 11: 137.
- Gardner, Howard. 1999. *Intelligence Reframed: Multiple Intelligences for the 21st Century*. New York: Basic Books.
- Kolb, David A. and R. Fry. 1975. "Toward an Applied Theory of Experiential Learning." *Theories of Group Process*, C. Copper (ed.). London: John Wiley.
- Meyer, Dan. YouTube video on real-world math, www.youtube.com/watch?v=jRMVjHjYB6w.
- Paschler, H., M. McDaniel, D. Rohrer, and R. Bjork. 2010. "Learning Styles: Concepts and Evidence." *Psychological Science in the Public Interest* 9: 105-119.
- Raymer, R. 2011. "Gamification: Using Game Mechanics to Enhance Elearning." *eLearn Magazine* (<http://elearnmag.acm.org>), in review.