Learning Lab Implementation Guide

What To Expect

The Learning Lab teaching format has the potential to dramatically increase student retention, speed up learning multiple times, and develop rich friendships between the students. At the very core, the learning lab is a sequence of the instructor doing an activity with a student, and then that student repeating that activity with the next student. How you apply this structure is very open - in the same way that a pencil is a very universal tool. This guide will provide you with inspiration and tips on how to use the format the most effective.

Developing Awareness For Student's Learning Needs

Lecture versus Learner-Centric

A common perspective that I fall into as well is to look at teaching from a lecture-centric perspective. I begin by imagining a generic student at the start of class. And then I create lecture notes that move the generic student through the different points. In my mind, I assume that if I explain a point, the student will fully comprehend it. Maybe, I'll offer them to ask questions. At the end, I assume that all students have gotten most of the material. Obviously, some will be more talented than others.

That perspective is very different from when I'm on the student side and observe what is going on. Students have very different experiences. One vivid contrast was a beginner Sensual Bachata class that I was teaching. One day, a middle-aged man with a high BMI walked in. That day, he was the only student. So I got to spend time with him. He had trouble moving his body in basic ways. For me, it was a lot of learning on how to coax someone to move their body in even simple ways. Every little bit of dancing was very foreign to him.

On another day, a ballet dancer walked into the beginning class. She had a lot of movement ability. She quickly picked up new information. When I gave her dance drills/exercises, she was familiar with what they do, why they are good, and what to focus on. Teaching her needed to be a lot more engaging to keep her interested. She already knew a lot of dance, but she needed to learn to apply that in a bachata-specific way.

As different as these two people were, whenever I go to actual classes, I find learner differences that are much stronger than anything I'd imagine sitting at home with a pencil to make a lesson plan. Here are some examples:

1. At the end of a calculus lecture, a student asked me for help understanding. When I sat down with him in the student lounge, it turns out that he didn't realize that f(x) and y are the same. The whole lecture was lost on him. I don't know how he got so far in math to arrive in a calculus class without knowing that.
2. Another student in the same class asked me for help. It turns out that she had retaken and failed calculus multiple times already. She didn't even know the most basic differentiation rule, the power rule. Any of the other rules that we were learning must have been completely lost on her. Plus, after she had heard about the power rule multiple times without getting it, how much would another lecture help?
3. In a partner acrobatics class, I observed one couple having come for years multiple times a week. They could easily execute the instructor demo on the first try and were standing around bored for most of the class. A friend who had come to the same class reported that she felt neglected. The demos were irrelevant to her because she didn't even bother to attempt them. And the instructors gave the beginners a little something to do on the side.

One-To-Many Teaching Paradigm

Students are often told or assume that you can get something out of any class or keep practicing the fundamentals. The students work around what the instructor is able to offer. Historically, you had a "master" of something who was very important and had achieved some knowledge and skill that was hard to acquire. How do you share that with many students? Most of the teaching paradigms are around offering one-to-many instruction: lectures, demos, books, videos, and online learning.

Underlying that are economics that basically break down to smaller classrooms cost students more. Smaller classrooms mean more personalized instruction. Ideally, each student could have a personal instructor. However, that would be a lot more times expensive. Not many people could afford that.

The limitation of one-to-many is not only that instructors deliver the same generic instruction to all students but that there is also more distance between the instructor and the student. I was in a social dance class once where the instructor couple tried to explain how much push/pressure to give for a move. They warned about doing too much. Then they warned about doing too little. They talked for a long time. It became uncomfortable to keep standing. And what too much and too little was was so subjective and never explained with some kind of reference scale. It's

difficult for instructors to explain concepts of feeling, reasoning, or aesthetics with words alone from the distance. A lot of student time is wasted with students being bored, disengaged, or overwhelmed.

Peer Teaching

Peer teaching has mixed reception among students. Some people are highly enthusiastic because they like the chance to interact with peers. Other students are more skeptical because they've had ineffective learning experiences with peers. My take is that peer teaching has strengths and weaknesses. And the setup makes a big difference. If students are simply thrown together, most of the benefits seem to be simply from the joy of interacting with peers. If scaffolding is provided, peers can become very effective. Students look at the structure they are given and how others interact in the system.

On the negative side, I remember being in a peer learning session where one of the least qualified students got a burst of overconfidence and started lecturing everyone wrong things. The novice students felt like they had to nod to everything. The more advanced students quietly distanced themselves, feeling shy about conflict to raise the mistakes in the student's claims.

Another negative example was a much-praised mentoring session. It was mainly the mentor going on a rant that had little relevance to me.

Weaknesses of peer teaching:
- Student-directed activities tend to fall flat. Many students are shy and unsure. When students take leadership, it tends to come from an ad hoc place without considering the greater picture. Occasionally, students have leadership background or prior exposure for certain learning activities or outcomes.
- Matters of opinion or judgment tend to be all over the place. Students have partial subject knowledge. They inject a lot of their personal opinion. It's very different from a professional in the field who has heard different viewpoints and consolidated a view or an instructor who has learned to present the major viewpoints in a neutral way.
- Students tend to be bad at explaining how they do things because a lot of their abilities are done innately.

Strength of peer teaching:
- Students tend to have a vast amount of knowledge, ability, and experience. If they are given specific tasks to do, they are capable to perform them independently.

- There is a lot of enthusiasm and empathy to help fellow students. (Qualifier: Students don't like being taken advantage of, e.g. doing all the group work. However, students recognize their own struggle and feel excited if they can help someone else overcome their struggle.)
- Students use language that is more accessible to each other. Instructors may have the textbook-perfect explanation. Students will use shorter language with each other that will make more sense to the other students. (Also a studio showed that students tend to not ask teachers follow-up questions when teachers answer poorly. However, they'll keep following up asking their peer until they get a full response.)
- The students adjust to each other.

The core assumption of the Learning Lab approach is that with the right scaffolding and asking students to do very specific teaching in something that they have been trained sets them up for success. And their 1:1 teaching has the potential to be more effective than the 1:many teaching of an instructor.

Perception About Learning

Research shows that perception about learning often diverts from actual learning. For example, a study was done with physics students. One group was taught with a traditional lecture. The other group used active learning with peers. The lecture group rated in a survey after class that they felt like they learned more. Yet their test scores were worse. The peer-learning group thought that they'd learned less but had better test scores. The researchers suggested that a slick lecture can create the illusion of things clicking a lot more than they do. However, over the long-term, students tend to calibrate their expectations with reality and realize that active learning indeed teaches them more.

A Columbia lecturer reported that students often revolted at the idea of peer learning in various form, including negative instructor evaluations. One student put it that she didn't want to be taught by a peer when she was paying $3,000 for class. The funny thing is that active learning has shown to be more effective learning. So you'd want that. At the same time, I can sympathize with the student. I might feel cheated out of my money if I pay that much and am taught by a random student.

The bigger question might be why pay so much money for a class? How much better/worse can a peer, teacher assistant, adjunct faculty, star professor, or Nobel Prize Laureate teach calculus? Sure some teachers are more engaging than others. Observing some teachers transfers a lot of tacit knowledge about the feel how they approach things or the enthusiasm they bring. Conversations with a professor can make a big personal difference. At the same time, calculus 101 has certain, specific learning outcomes that are almost like a commodity.

You need to invest a certain amount of personal effort to understand the concepts and develop the ability to apply them. Master Class is a famous online school that offers video classes from top experts in their respective fields. It is often described as one of the most effective ways of learning. Students simply sit back and listen passively to a slick lecture that creates much more an illusion of mastery than actually challenges the student to mentally engage and learn.

Learning Goals

When we shift our focus from a master teacher applying magic dust to us to make us great students, we focus on what we actually learn. Some fields like math, have a logical sequence of insights. Generally, if you miss a prerequisite insight, you can't get the next insight. And it's seemed to me that students with bad math grades don't intrinsically have bad math aptitude, but they lack some foundational knowledge. And in my tutoring experience when that knowledge was filled in, students easily turned from F into A students. Beyond that what math really teaches is abstract thinking. For a lot of students, that can be the biggest benefit to their future life.

That logical sequence of insights lends itself well to a learning lab approach. The feedback I've gotten from tutoring programs was that they were considered ineffective by the mentee because they believed the mentor simply gave them the solution and didn't teach them anything. (Remember, peer mentors tend to not do well when they aren't given structure.) However, if students were given a checklist of prior knowledge to test with their mentee, they would likely be able to point out: "Hey, you don't get that (prerequisite knowledge)."

Other subjects have more of a mix of explicit and tacit knowledge. Explicit knowledge is knowledge that can be readily explained. Tacit knowledge is knowledge that's hard to explain. Someone good at the field would simply intuitively or from experience do it a certain way. For example, in marketing, there are probably some characteristics for good taglines that can be listed in a lecture. However, there is also a lot that's hard to explain or even goes against the official rules. Yet most professionals will agree that it is good.

In some subjects, instructors may not be able to formulate how to achieve success in some areas. For example, in social dance, there is a certain dance school approach of teaching dance with counting and telling students with which foot to step. Yet a great dancer will move in a completely different way. Many instructors will say that it comes simply from a lost of practice because they aren't trained in teaching movement.
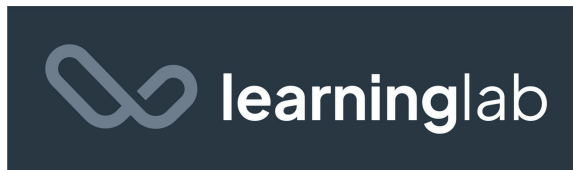
Learning Labs are good at teaching tacit knowledge. An instructor can work with the first student on learning a mini-lesson. And in that interaction, the student can model the instructor. The instructor can give the student individual feedback to guide them into a certain direction. And when the student has acquired that hard-to-put-in-words ability/knowledge, they can pass it on to the next student in the same 1:1 mentoring approach.

Another type of subject might be very information-heavy, like medicine. Peer-assisted Learning (PAL) approaches have been found to be effective even in this context.

What's Involved In Learning

There are certain things that we know from studies to what makes learning more effective.

- **Passive versus active learning:** Passive learning is observing a lecture or watching a video. The student passively receives the information. Active learning is when students do a learning activity together or answer essay questions. Active learning is significantly more effective. (The Learning Lab format is active.)
- **Summative versus formative feedback:** A lot of learning feedback comes in the forms of tests. And that comes mainly in the form of an important final test. That's called summative feedback because the student gets the feedback at the end. Formative feedback is when the student gets all along feedback and that motivates and directes the learning of the student. (With the Learning Lab format, students are given feedback from their peers the whole time. E.g. if they learn a dance, their mentor will guide them to doing the figures correctly.)
- **Test for knowledge gaps:** Related, it's important to test for knowledge gaps. Students tend to not like testing because it's stressful. Recreational classes might skip it completely because they want their students to be happy. (The Learning Lab implicitly tests students. Every time a student teaches a lesson, they realize if they are missing part of the explanation/lesson. When their mentee asks questions or struggles, the mentors are tested. Yet it doesn't feel like a test because they are helping someone.)
- **Spaced practice:** Learning research shows that spaced practice is important. The process of partially forgetting and reacquiring the learning develops more neural connections. (The Learning Lab has the flexibility for students to go back to previous questions. And each time they are mentoring another student, they practice one of their previous lessons.)

While for many teachers, the lecture format is the default approach to teaching, the Learning Lab format implicitly uses a lot of the aspects that make learning more effective.

Summary

It is common to look at a lecture or demo as teaching everything that the content covers. When we look at individual real-world students, we find that learner needs are very varied. When we look at what's necessary for deep learning, we find that the most effective means are active learning, early/regular feedback, spaced practice, and testing. As foreign as it may appear at first that a student could teach more effectively than an instructor, when we look at which activities are effective for learning and how we can structure peer learning, we find that peer learning has the potential to be very effective with the right structure.

Getting Started - First Exploration

A lecture or demo-based class can be much easier to prepare for. You jot some notes down and start lecturing. Or you create a choreography on the way to the dance studio. However, for a Learning Lab, you have to first create a peer-teachable curriculum of mini-lessons. Then you have to teach the first students in the mini-lessons so that they can teach the rest of the students. If you consider that you'll likely have to test-and-iterate on the lessons until they work well, it's quite the upfront effort.

Does that make the Learning Lab worse than a traditional class? I don't think so because when you create a Learning Lab curriculum, you are creating a much more thoughtful learning experience than a few lecture notes and winging it. I think of it a little bit like a scramjet. You have to reach a certain minimum speed before the engine can be started, but then it make you go much faster.

However, to get started, it makes sense to get started with small, little experiments to gain experience. It's a very different learning approach. Your students may be a bit apprehensive. So here are some ideas.

A Learning Lab Segment In Your Regular Class

Recall, at the core, a learning lab is an activity between students. And then the learning student repeats the activity with the next student. The app keeps track of that progress and helps students find mentors to learn the next lesson from.
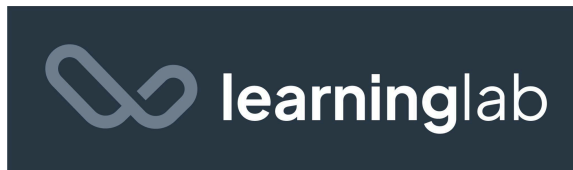
You could simply use the last half hour of class to do a Learning Lab. The mini-lessons could be more exercises than learning new material. It wouldn't be a full learning community that teaches itself the whole subject. However, you can observe how students pair up with each other. You can observe hesitation and communication challenges that different students have. You can learn how to intervene in them by walking around and talking to students or how you introduce the activity to students.

You can also repeat the Learning Lab segment over multiple weeks so that the amount of lessons that people in the group know grows.

Some instructors play with the flipped classroom approach. In a math class, students could be assigned one of four different side problems. Math classes often have interesting special cases that one can learn to deepen the understanding and math skills. The assigned student would try to learn how to solve the special case on their own. Then in class, they can ask questions. During the Learning Lab, they would mentor their peer in the problem they learned. And they would seek out students to learn the other three special cases from. (This blends self-study and learning lab a bit, but you have to be creative on how to teach the first lessons to get a Learning Lab started.)

A Two-Hour Workshop On The Weekend With Volunteer Mentors

Recall, that one of the tricks is that, in the beginning, no student knows any lesson. And a teacher can only teach a lesson 1:1 (unless the teacher reverts to traditional teaching). So a lot of students would be standing around idle. A way to bootstrap this process is to invite students from the level above to help out. These higher-level students are likely to pick up mini-lessons much faster.

The higher-level volunteers could arrive half an hour early. You review the mini-lessons with them. You might have some of them do mentoring demos to give them feedback on mentoring.

Then the actual students show up. In two hours, students could learn eight fifteen-minute mini-lessons. That's a good amount of material for such a focused session. Ideally, you have the same amount of higher-level and regular-level students so that the pairing works out.

Remember, you don't have to use the app. You can also use low-tech tools. For example, a whiteboard with a table where each student has one row and each lesson is one column can be easily used to check of lessons and see what is remaining.

Bootstrapping A Regular Class With A Partner

Some subjects might be easier to convert to Learning Labs than others. A lot of social dance classes teach steps in groupings of eight because the music usually has a bar of eight notes. A common class teaches four bars of music. You could turn each bar of choreography into a mini-lesson.

The other twist of social dance classes is that people typically dance in pairs, a leader and a follower. So you can have one mentor and a mentee pair.
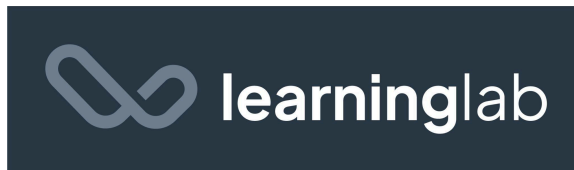
Remember, the trick with seeding the first lessons in a learning community is that it's very slow at first. At the beginning, only one student can learn from the instructor. However, as each learner turns into a mentor, amount of students who can learn grows exponentially.

Picture the following:
- :00 You and your instructor dance partner split up. Your partner leads a warm-up of individual movements. You teach the first student pair the first mini-lesson.
- :05 You teach the second part of the warm-up. Your partner teaches the next learner pair. The original student couple splits up and each student teaches their own couple. (That's now three couples or six students learning.)
- :10 You and your teacher can teach a couple each. You have eight students who can teach. That gives you a maximum of 10 learning couples (or 20 students). So 28 students could be engaged.
- :15 Let's assume that there are no more than 28 students. Half the students can learn the second mini-lesson now.
- :20 Everyone could know two lessons by now.
- :25 Half the students learn the third lesson.
- :30 All the students know three lessons.
- :35 Half the students learn the fourth lesson.
- :40 All the students know the fourth lesson.

Note: As instructors, you wouldn't only teach lesson #1 until everyone knows it, but you'd mix teaching all the lessons. That way, lots of different lesson are in the room. And no lesson becomes a bottleneck.

Realistically, the timeline is a bit shortened. You'd expect that there'd be some time lost pairing up everyone. Some people have to repeat lessons. You have to make some announcements as teachers. I'd expect that the Learning Lab of this format wouldn't be as orderly as a group class. In a group class, the instructor couple simply moves on and teaches the next thing. When they demo, everything looks pretty. In the Learning Lab form, because students have to teach the next student, they'd want to fully get their choreography piece. There'd be a lot of questions.

However, the proficiency of how much of the choreography was acquired and can be reproduced later is likely going to be much higher.

Staggered Starting Time

Recall a challenge of the Learning Lab format is that in the beginning only the teacher can teach the first lesson. A strength is that the lessons spread exponentially. To avoid having a lot of students standing around waiting, you can create a workshop with a staggered start time. At first, only one student would show up. Fifteen minutes later, two more students can show up. Thirty minutes later, four more students can show up.

The formula is essentially:
1. Round 1: 1 teacher and 1 student.
2. Round 2: 1 teacher, 1 mentoring student, and 2 new students.
3. Round 3: 1 teacher, 3 mentoring students, and 4 new students.
4. Round x: 1 teacher, and $2^{(x - 1)}$ students.

The challenge is that students may not show up on time or at all. This will have a ripple effect that can have a bad effect.

You can improve the spreading of lessons if you have volunteers from veteran students or other instructors.

Learn A Lesson From A Group Of Experts

Recall that the learning lab format is pretty flexible. The core tenets are that students learn from people who have mastered the lessons. And students follow a curriculum of mini-lessons. One of the challenges is how do you motivate students to learn from other students. They sometimes have reservations about learning from non-experts. You could introduce them to the Learning Lab format by offering them to learn a 1:1 lesson from an expert in the field. Then stay around to teach what you learned to someone else.

You might recruit five experts from your faculty to teach a mini-lesson about their specialty subject. Students could sign up for a session with them. And while they wait for their session, they can use the time to share what they learned with other students who wait. That way, students are motivated because they are learning something valuable 1:1 from someone they
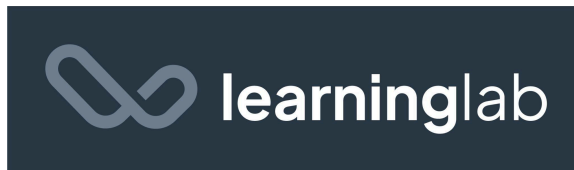
respect. And the get exposed to the Learning Lab approach. They might find that they really enjoy the interactions with their peers in between the official sessions with the experts.

Creating A Curriculum Of Peer-Teachable Mini-Lessons

You are likely going to have your own approach for creating a curriculum. Here are some good insights and suggestions to make you more effective. You might not follow this plan exactly, but conceptually those are the steps you'll have to go through.

1. Brain dump your subject onto post-it notes.
2. Break down lessons into smaller lessons until you have concrete mini-lessons.
3. Translate lessons into peer-teachable lessons.
4. Think about underlying skills.
5. Consolidate the lessons into a learning journey.
6. How to write up instructions.
7. Test on students and iterate.

#1 Brain Dump The Subject Onto Post-It Notes

A good first step is to brain-dump your subject onto Post-it notes. You may start with a subject that is well-defined. For example, there are many calculus textbooks with a chapter outline that provide a good starting point. You may start with a subject like bachata dancing where it seems well-defined at first. However, as you think more about all the things a student has to learn, you realize that there is a lot more to teach - things that simply never came to the top of mind before.

The Post-it notes allow you to lay everything out visually, the floor or a wall provide a big canvas. There will likely be many lessons.

You'll likely get to a point where you'll count the Post-it notes and multiple them by 15 minutes to realize you have way more material to teach than fits into a reasonable amount for a course. Don't panic! Falling back to the alternative of rushing through a lecture may let you include more material but not actually get the students to learn more. When you plan the actual learning journey, you'll have to be selective in what you can realistically include in the curriculum for students to learn.

#2 Break Down Lessons Until They Are One Concrete Thing

One of the tenets of Learning Labs is that mentors like to teach one concrete thing. They don't want to teach more because it feels like labor. It also makes the structure vague. Having one concrete teaching goal, preferably a skill, ability, or outcome with a single, clear success criteria is ideal.

If lessons take more than fifteen minutes, is there a way to do them in steps?

#3 Translate lessons into peer-teachable lessons

So you have a lot of Post-it notes with abstract concepts, lessons, exercises, and various other things. A bit of the magic is how to translate them into peer-teachable lessons. A feel for a lesson that works well is if the lesson is about "How to do X." Then peer mentors have a goal. They probably know what steps they have to take. And by quickly looking at the teaching notes, they recognize any steps they wouldn't have taught but seem important to include.

Let's say that you have a photography class and want to teach leading lines. Your lecture notes might have said to explain what leading lines are and show some examples. Students aren't really happy to do regurgitate talking points. And when they give an explanation, they may leave things out or aren't as eloquent as an instructor. What is the point anyway in having a student try to explain it when the learner could simply read a much better definition in a textbook?

The benefit of a peer mentor is that they are interactive. So, a lesson where the mentor shows leading lines in the environment and then has the learner try to find them somewhere else might be a lot more useful. Rather than simply transferring what the knowledge is, the mentor can teach how to recognize and use them. That's a much better learning.

Students may not be able on their own to teach how to find leading lines. That's where the initial seeding comes in. The instructor can work with the first student in-depth to show them, guide them, and give suggestions until the first learner developed the ability to work with leading lines. And once they got that, they can pass that on to the next student. A benefit of Learning Labs is that it is interactive learning and also transfers tacit knowledge.

#4 Think about underlying skills

The previous step will have started to make you think about how to teach abilities. As you dive deeper into understanding what a student needs to learn to master the subject, you'll likely recognize that there are certain underlying skills or meta-abilities that make a student effective.

For example, in a social dance class, often each traditional group class teaches a choreography. There is little explicit thought about musicality, movement skills, or choreography uptake skills. Students are expected to absorb these things by osmosis. For example, in many sports, the weight transfer from one foot to the other appears mundane but is a superpower. For example, arm movements start looking amazing when the weight transfer of the body creates an illusion of the arm movements being even more fluid. In math, being able to concisely explain the problem is often the foundation for solving the problem.

In a traditional drop-in class, students may be disappointed when they came for a choreography class but got a music theory class. With the Learning Lab curriculum, you are laying out the whole learning journey. And there is the ability to teach all these underlying skills specifically to make students grow faster. They can look ahead in the curriculum and set expectations that once I'm one quarter in, it's time to learn some music theory. Further, it can be only one mini-lesson and thus only be part of the whole class.

#5 Consolidate the lessons into a learning journey

With traditional drop-in classes, first-timers are thrown into the mix. Loyal students hang around doing things easy for them. With the Learning Lab, each student follows their own curriculum. So, you can think about what their day #1 welcome should be like. You can think about their big milestones of learning. I still remember when my German math teacher came into the classroom with a suit because the subject was so important that teachers would traditionally wear a suit to commemorate the important moment.

What would you have wanted to be shown/told at the start of your journey with the subject? Maybe, you'd introduce a topic in a simplified way. And at a certain point later, you'd revisit it to give a fuller explanation. The learning lab allows you to think about the holistic journey your students go through.

(Personally, I'd find it so exciting if I had a lesson in my curriculum that would be so eye-opening, exciting, or life-changing that students ask each other if they have reached that level yet. When learning Argentine Tango, I remember how excited people were to find out if they had learned a certain move yet.)

#6 How to write up instructions

You've gone through breaking apart lessons, combining fragments into lessons, translating knowledge into interactive exercises, and thinking through the whole journey. You had to do some pruning. What remains are crystals of lessons. You are excited about each learning activity. The whole journey is thought out really well and an exciting life experience for students to go through. The next question is how to best write it up.

Your first impulse might be to write up a lesson by explaining the lesson. That has two bad outcomes:

(1) Students will be trying to learn them by reading rather than interactively learning with a peer. When students self-study, they are told to analyze a grocery aisle for market segmentation. They'll read it but won't do it. It takes interactively doing it with a mentor to actually do the learning.

(2) The mentors will stand around reading the whole lesson instead of mentoring.

Recall, students are supposed to learn from students ahead of them. So they don't need a whole explanation. If they need it, they should go back and learn the lesson again. The key point of the instructions are to remind the mentor about the instructions steps with 3-7 short bullet points.

The mentor should look at the lesson name and recognize what they should teach. For example, in acroyoga, the lesson would be to teach side star. The mentor should already be proficient in side star. They might not know how to go about teaching side start well. So the instruction bullet points will remind them:

#1 Ask the student to do the yoga pose Half Moon.
#2 Have the student repeat it against a wall until their body is completely flat.
#3 For flyer, ask them to not put the wait down, but lean across the base.
#4 For the base, ask them to receive the flyer's wait until they have it completely.

Note: I've written the above instructions a bit more explicit so that you, the reader, without an acroyoga background can make some sense out of it. For actual acroyoga students, a more concise write-up would help.

You really want to focus on short, concise steps for the success of your mentors. However, you can add additional sections. I like to add a section called "deeper cuts" that gives more

advanced variations for students to deepen their ability. "Troubleshooting" is another great one to explain what to do when mentees get stuck on certain things. For example, to learn side star, a lot of flyers arch their back. So the section could explain what to do then. The idea is that mentors don't spend a lot of time reading, but they have extra help available as they need to.

A common criticism that I hear a lot is that people don't like a lot of text. They question how you can learn some subjects like dance from text. The reality is that the app lets you add videos. And specifically, the recap videos are great. They don't teach the subject, but they show the particular dance move or whatever is taught in a few seconds. If you annotate the video with text and free frames at certain points, they can be highly effective.

The reality is that creating visuals is very time-consuming. It often takes me an entire day of video editing to cover one level of lessons. People might not realize how much work it is to do multiple takes to find a good angle. And then you have to edit the video. Ideally, if you have the time and money, create the most amazing video. Practically, text is much faster to produce and edit. As we'll see in the next section, you'll have to expect a lot of testing and revising of lessons.

#7 Test on students and iterate

You'll have to expect that your first lessons belly-flop. Lectures don't really belly-flop in obvious ways. Students may still say nice things. They may keep a poker face while they are bored. However, with Learning Lab mini-lessons, you are asking students to mentor. If the lesson is unclear, you'll get questions, you'll see them stall, and you might see them do unexpected things. Because you ask people to take action, you are really going to surface issues that a handout that lands in the trash outside of your view wouldn't.

The great news is that with Learning Lab mini-lessons, you don't have an entire lecture committed. You have two students spend fifteen minutes on it. If you have a class of seventy students, that's a really small impact. So you get to test your lessons a lot more and refine them 2-3 times before the majority of students gets them.

The feedback will likely be unexpected. Students might ask you to change it into certain ways that don't make sense to you. Don't take what they are asking at face value, but investigate what problem are they encountering underneath. Then you can make an intelligent decision about how to address their issue and keep your academic mission on track.

Quick Example: A Sensual Bachata Curriculum

Here is a quick example on how to create a Sensual Bachata curriculum. I assume that a regular reader wouldn't care about reading through the full details of Sensual Bachata. So here is a quick outline and examples for various steps of the curriculum creation process.

1. Dumping out the lessons on the Post-it notes starts pretty simple. There are well-known figures like the lateral basic, inside turn, shadow position, etc. There are subjects like elasticity and musicality. It gets a little bit tricky because there are a lot of figures that don't have a proper name or are not taught that frequently.
2. Breaking lessons further down gets a little tricky. For example, musicality is a rather large subject. But we can break it into syncopations, finding the first beat in a bar, and so on.
3. Translating lessons into peer-teachable lessons is where things get fun. Having students lecture about elasticity is probably ineffective. However, there are exercises where partners lean against each other and lean away from each other to learn to maintain tension. These are not only more fun to do but build practical skills.
4. Thinking about underlying skills is where we start to change how we teach. In typical group classes, followers are often told to follow or what to do as a follower. However, they are rarely taught how to actually follow. We could do lessons on follower signals and exercises to develop sensitivity for receiving the lead. We can make a real difference on how well students are taught.
5. Some of the lessons may be too splintered and need to be consolidated. For example, we have a lot of notes about all the details of how the body has to move (shoulders, arms, hips, etc.) We might consolidate those into a lesson for traditional and another for sensual body movements. We might also want to do a specific lesson to introduce students to partner dancing. It would be an improvisation exercise to get a feel for leading and following without learning bachata proper.
6. Write up: Inside Turn
    a. Step with the learner without music.
    b. Repeat to the beat of the music.
    c. Make the learner prep themselves by turning in the opposite direction.
    d. Practice on 5.
7. When testing on students, a lot of students start turning one way and suddenly/inexplicable turn the other way. As the students to pick the hand with their watch on and always turn into that direction.

Quick Example: Acroyoga

Acroyoga is essentially partner acrobatics. I won't repeat the steps to build a curriculum, but I'll introduce some additional curriculum design aspects. Levels are a way of grouping mini-lessons and building intermediate milestones. I tried to make roughly one level correspond to two classes. Based on the class duration and number of lessons that can be taught, it seemed to make sense.

Each level, I structured into three warm-ups, three acro poses, and one flow. The warm-ups were partner exercises that taught specific skills. However, they weren't as intense as acro. They provided a good mix of warming up the body, introducing new skills, and having fun. The flow was an integration of all the poses that the level taught. Students like to learn flows (called washing machines in the technical language). So learning a flow at the end of the level is an achievement.
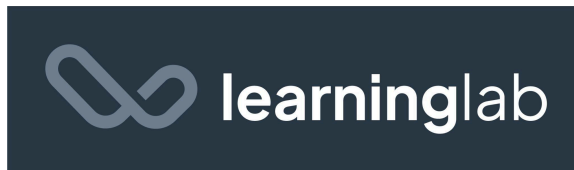
Overall for the level design, I knew that there are certain milestones for beginner students to learn the following poses and machines in this order: Bird, throne, side star, star, ninja star, and four step. So I used that as the rough tent poles for the curriculum. I knew that there are certain specialty subjects that should be covered like standing acro and lunar acro. That filled in the curriculum more.

Once I started running the curriculum, I noticed that if students got certain insights, they would progress faster. Students tend to rush to get an acro pose happening. However, if they are taught proper alignment and things like waiting for complete wait transfer, they progress a lot faster than rushing. So I made those underlying insights key parts of the curriculum.

Running A Learning Lab

Introducing the Learning Lab new and introducing a new student to an existing Learning Lab are two very different things.

When you introduce the Learning Lab new, you'll have to confront concerns about learning from another student and using a phone during class. Once you have students experience a Learning Lab for a while, they'll realize how it works and appreciate it. New students will enter the Learning Lab seeing how everyone is participating. They'll see from the expressions of people who much they enjoy it, which is enough testament for them to want to try it and follow the example of the existing students.

There is no clear answer to how much you should explain to students. It depends very much on the individual. Some people are very hesitant. Some people don't want details. Some people love peer learning and want to know a lot about it.

So you got your students in the room. You gave them a welcome and intro. You will ask the students to create an account a log into a session that you created. Once you see all the students signed into your session, you can ask the algorithm to create the first student pairing. The students will see who their next study partner is, what the lesson is, and who teaches/learns.

You might want to fine-tune some student pairings or lessons that they are supposed to work on. Maybe, you know that Joe is really excited about a particular lesson and there is no reason why he couldn't jump ahead. Or maybe, you know that two students don't get along very well with each other.

While the students are teaching each other, you might be teaching a lesson as well because you want to work with the most advanced student or get a new lesson into the group. If you aren't teaching, you can walk around the room to make yourself available to answer questions. You can observe and listen into teaching sessions to see how students are doing. You might find out that lessons need refinement. You might get to know your students and can provide specific tips.

Around the core of the Learning Lab, you might want to add different class segments. You could have an opening circle where each student gets to introduce themselves. You could have a showcase segment where students get to show what they learned. It's good to get recognition. There might also be freeform practice time. For example, after students spent an hour learning, they might have a half hour of freeform social dancing to simply have fun.

Learning Lab Foundation

Learning Lab Principles

A functioning Learning Lab has the following core principles:
1. Students learn a lesson from a student who has already mastered the lesson (No same-level peer activities)
2. Students switch between learning and teaching.
3. Good mini-lessons are small, specific, and centered around a task, ability, or outcome.
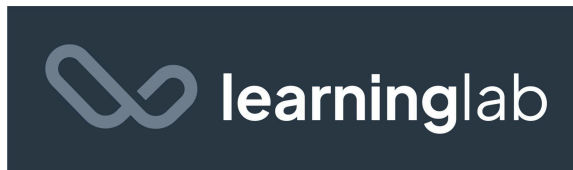
4. Students follow the curriculum at their own pace. (There is room to repeat and jump ahead.)
5. The app keeps track of the progress and allows students to find each other.

Learning Lab Beliefs

The following are underlying beliefs for the Learning Lab approach:
1. Peer mentors can be effective if they are given a single, specific teaching task and concise steps on how to do it.
2. Peer mentors can be quite effective in teaching something that they have mastered.
3. The interactive 1:1 teaching can be more effective than a master teacher teaching a group class from the distance.
4. While students may want fun the most, the deepest fun comes from getting good at the actual subject when it is taught well.
5. Social belonging is an important part of learning both as a conduit for learning, as motivation, and as an intrinsic need.
6. Making and seeing progress are key for sustained motivation.

Learning Lab Concepts

- **Learning edge:** There is the idea that we progress through a subject matter. Where what we've learned and not yet learned meets is where our learning edge is. Beyond that, mentally, we have a place where our current interest lies. Maybe, we want to learn a specific skill. Maybe, have a particular question or understanding challenge. If someone meets us there, we are at our "learning edge." It's what we are most ready and motivated for. In traditional classes, the class covers whatever the teacher presents. We spend a lot of time away from our learning edge. In a learning lab, because we learn 1:1, our partner can adjust to us and keep us at our learning edge. That's both at the strategic level of which lesson to work on and at the tactical level of how to engage right now.
- **Pointability:** A challenge with typical peer-to-peer learning is that you put two people together. The possibility of what to learn is so open-ended that people are often unsure about what to do. When you ask people what they know or could teach, they answer vaguely because it's such a large area. Having a learning lab curriculum of small lessons allows people to point at what they want to learn: "Teach me lesson X." Having the large, vague space of what to learn broken into bite-sized pieces that everyone can see allows

people to point at what they want to learn and makes it clear. This is a big help for negotiating what two peers can teach each other.

- **Containerization:** The concept of a container for an activity is borrowed from somewhere else. In that context, a container defines what a social interaction is going to look like, e.g. for 15 minutes we are going to do x, but not y, and we'll go through these steps. That way two people can develop consent for an activity quickly because without spelling everything out, both know what they agree to.

  Every mini-lesson is its own type of container in a way. It's time-limited. It spells out what the activity is going to be. Both people understand what they are getting into without having to explain it to each other. A lot of human social interactions are a bit bland. We do small talk, we sit in front of each other with a drink, etc. Mini-lessons can be highly interactive exercises. An instructor carefully developed and refined them. Instead of simply talking in a social context, people can bring up a specific mini-lesson/container and ask if the other person wants to do it. Lessons can be things like develop a segmentation strategy for a product in a marketing class or develop elasticity for lead-follow in a dance class. It allows people to have richer interactions by using "well-designed containers." It's kind of like popping in a movie. Do you want to watch Batman? Do you want to do the lead-follow elasticity lesson?

- **A person right in front of you:** This expression refers to that in a learning lab, you have a peer mentor right in front of you versus, in a traditional group class, there is a distance between the teacher and the student where the teacher cannot respond and pay attention to every single student directly.

  This having a person in front of you solves many problems of a classical classroom. For example, if a learner doesn't follow a mentor, they'll likely have a look on their face. Then the mentor checks in. They can figure out where the understanding problem is and correct it on the spot. In traditional classes, students often miss something that keeps them from understanding the rest.

  Or the way the lesson is presented can be adjusted to the learner. The learner can fast forward over what they already know. They can ask to slow down where they are struggling. If they are antsy, they can be given a chance to try and fail and then come back to learning. If they want more confidence, they might want to work on fundamentals. If they miss an important idea/concept from another class, the mentor can skip to whatever is needed by the learner.

- **Asymmetric learning:** A lot of peer learning is done where both peers are at the same level. Say in a dance class, you have beginners dance with beginners to try to learn a new dance figure. They'll generally face a lot of challenges because both the lead signals will be executed poorly and the follower has poor following skills. They'll probably both have movement challenges. With all this noise going on, it's hard for them to get
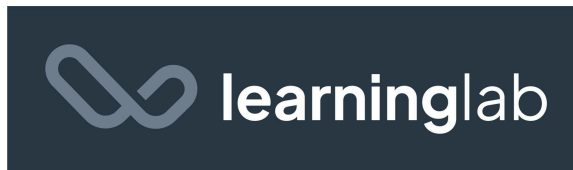
feedback on what they are doing right and where their key issue is.

It's much more effective to learn from someone who already knows. Say a lead who knows the figure teaches a follower. The follower gets to feel what the correct lead looks like. The follower gets to figure out their own movement to make it fit into the leader's movement. The mentor can pinpoint the big mistakes and give feedback. Often there is a root cause for a cascade of mistakes. Someone with experience can point at the root cause.

The learning will be a lot faster that way. And part of the gift of time to teach is rewarded by getting that gift from someone else. And the summary effect is that everyone learns faster. Plus, the perspective of mentoring gives students the chance to really observe all the aspects that go into a skill and to get a clearer grasp. The first times mentoring that figure, the mentors might themselves be a bit stumped on why it's so hard for that particular learner. And in troubleshooting that, they'll gain a deeper understanding.

- **Elasticity of lessons:** If you think about a traditional learning unit, it would be to list all the dimensions for marketing segmentation. That's a fixed units of items to remember. A learning lab lesson would be perhaps to analyze the market position of a product. As you repeat the lesson or do the lesson with different people, you can do a more thorough or easier analysis discussion. Or if you learn an acroyoga pose, the lesson offers options to challenge oneself to do more advanced variations. In that way, learning lab lessons tend to be elastic where they adjust to the ability of the learner and can also be repeated and keep being engaging. (The key is that the mentor and learner are in a 1:1 setting and adjust to each other.)