

Room 302 Session II

Facilitator: Pamela Thompson

Name of Presenter(s): Luke Shorty / Maine School Science and Math

Creative Calendars: How to restructure the school calendar to help facilitate partnerships with businesses, schools, and organizations.

Hi, my name is Luke Shorty and I teach at the Maine School of Science and Mathematics [MSSM] and before that I was a Math teacher up there, and before that I was a student up there. I graduated in 1998 and one of the things I want to share and talk about is “creative calendars” to try to facilitate partnerships, because that’s one of the strong things that MSSM does with their student body, as I hope you saw down in the exhibition hall. But before we begin, introductions are a good way to start and what you’re hoping to get and maybe bring to the conversation. Am I going to have an answer for you? Probably not, but what I’m hoping to do is have the type of conversation that will give you something to bring back that you will find useful.

My names X, I’m at ...mouth Middle School and I teach 7th grade math and science.

X, Lockheed Martin, an engineer.

X from the Girl Scouts of Maine.

X, USM College of Science, Technology and Health.

I’m X and I work for Texas Instruments as an engineer.

I’m X and I work for GMRI, Gulf of Maine Research Institute. I’m curious about the calendars. You asked us what we wanted to get out of this. I’m curious about one of the things I studied in my Masters for Education, which was year-round schools and how that kind of school calendar can really reap some benefits.

I’m X, I’m the Education Technology Consultant for Texas Instruments in New England.

I’m X; I teach chemistry and physics at [?] High School.

To start it off with, I’ll tell you a little about MSSM’s calendar. The way that it’s structured is we start like most other schools and we have a fall semester, and after the fall semester we take a break. We do have a spring semester. We teach a bunch of our core courses; it could be some of our advanced courses like differential equations, it could be one of our lower level courses like advanced math, which is a mixture of algebra II and trigonometry. It could be any of the sciences; our lab sciences kind of fall into here [speaker is drawing something on the board]. What we do to kind of expand our programs is we have a “J” term, which is a 2-week period that falls between the terms. This allows us the flexibility, at least at MSSM...we have one educator who helps coordinate and match students up with businesses and companies from their area. They’ll go down and do a 2-week internship with a company, which is what you saw with those

exhibitors. So this idea of a J-term has really opened up the idea to do internships and mentoring. It also allows us as educators....say you know what the interests of your students are...I've got a bunch of students who are really into robotics. I can do a 2 week intensive block on robotics and offer unique courses. This year we had "robotics," "the science of spinning," which was a course based on textiles and the kids started spinning yarn. They actually made their own spinning wheels in the course. They went from drop spinning things, where you take something and just kind of drop it (which is what Ghandi used) to a foot-run kind of spinning wheel, which is cool. They went through the history of it. We also had a straight history course, the humanities; it just allows us to spend time on the interests of our students and enrich our curriculum that way. Another thing we do is a 2-week trip in a partnership with the Island School. Has anyone heard of the Island School? No? It's a school in Cape Eleuthera, Bahamas; January's a very good time to leave Maine and go down to the Bahamas. We have students who actually do environmental research; they'll swim and look for invasive fish, like the lion fish. Has anyone seen a lion fish? They've got these nice little spines and they're real pretty. But they go around and they count them because this Island School is doing research and you're able to tap into that. So J-term gives us some flexibility; and then we go back into a spring semester. This is my first year as Executive Director and one of the first things that I presented to the Board is another week at the end of the semester that is an off-campus intensive, which would allow the students to do a summer internship program or do a leadership program, or allow MSSM as a school to partner with other programs, businesses, institutes that do not run on the regular school calendar. That seems to be the big rub there—most business's schedule may not fit in with the school's schedule or you can't get time out of certain classes to invite folks over. So I'm bringing in this off-campus intensive, and another thing that you can do, that we're doing at MSSM, and maybe your school district will allow you to do is something called "themed weekends." Because we're a residential school and all the kids are living up in Limestone, we can take a weekend day and focus on a certain topic. In the fall, we did the Gatsby Ball. In American Literature, the students had just finished *The Great Gatsby* and we had all our students come dressed up from the 1920s, do the Charleston...and everyone was trying to figure out who Gatsby is because there was only one Gatsby. So this was a focus on the Humanities. At the end of this month, the whole school is going down to the Schoodic Educational Research Center to work with the Jackson Lab, Bigelow Lab, and the Gulf of Maine Research Institute. It's a weekend and some companies may have some time to work with students. We've also had engineers come up to the school. I know that in some school districts you'll find that the response will be: well, we don't usually do school events on the weekend. How do you change your calendar? How do you change what your year looks like to help facilitate these types of partnerships? It's been my experience....and I want to open it up to discussion with all of you, asking: what would an appropriate school calendar look like? Or what are the kinds of things we need to investigate to help facilitate these types of partnerships in the school year, to get more students engaged? So the big thing that you'll find is that school calendars are stamped and approved by the school board; how do you get your school board interested in changing the calendar? Well, you can do that with your

administrative team. There's a public time at every board meeting where you had a group of teachers or you had a planning group and you really wanted to look into doing something like this—that's where those conversations would have to be on the school end. But I would like to hear from you: what would the perfect calendar look like? I'm going to try and draw a mind map of what some of our ideas would look like. This is what MSSM is doing, but I'd love to hear from companies, from educators about what types of things you would like to see and what your calendar would then look like. Hopefully with all the brains in the room we can get a picture of what a good program would look like.

I'm X, UMaine Engineering. What I'd like to see is simply a way to find out what this school is doing in 2 weeks, or what that institute is doing in 6 weeks, in a common calendar, so that we can all plan our events and partner better, complement each other instead of competing.

So a common calendar for schools, institutes, businesses...

Yeah, we all have these things, teacher workshops...I run the engineering expo. We've all got these different things that we do. We collaborated with the YMC state swimming; well, that gave us a 1000 families extra! It was a built-in audience; You could marry those two events together and everybody wins.

We found at MSSM, with our summer camp program, that our teacher's camp actually runs the same time as the ALTI [?] camp and is the same time as the Island Institute's camp and we were all talking: why can't we do this now? It seems like you could.

I work for Lockheed Martin and I'm an integration engineer. One of the programs that we put on is called "Space Day." I've been doing it in the state of Maine for 15 years and I go from district to district. And what we do is we go into a school and take over the entire instruction for a day. I bring in speakers from all over the U.S. I've brought in astronauts, anything that engineering, science, technology—anything like that. We bring in these speakers and they come with activities, because we really feel strongly that you should be "hands on." And one of the things that I am always looking for are speakers. I have 20 or 30 regulars, but I always looking for additional ones, especially in engineering. We're doing a program right now is astrobiology and scientific ballooning. I putting some engineers into some high school classrooms, but I'm having trouble with, say, Farmington high school because it's so far away from a lot of people. You know, if I had some kind of database somewhere of mentors or speakers who were willing to go into classrooms. And if they're age-specific, well I'm actually doing 54 Kindergarteners, 4 and 5 year-olds next week for Headstart, and I've just done high school engineering. But I know that there's a lot of other people out there.

I just want to ask a couple of follow-up questions, especially for the educators in the room who may be salivating right now at the idea of getting a whole program into their school calendar. Who should the teachers talk to, the administration?

Yes, usually how it works is each year I fulfill requests from the year before. I would say the best way for everyone is to go through the Maine Space Grant Consortium. Just select “Space Day” and they will get in touch with me.

And who should get in touch with them, the administrator or the teacher?

Oh, anybody, it doesn’t matter. And there is no charge. But I will tell you that we have some great opportunities. One year I actually had a black hawk helicopter land on a middle school.

That’s awesome.

We are really trying to get hands-on activities to students to inspire them. Lockheed Martin, like a lot of other companies across the United States...we have approximately 70% of the engineers retiring in the next 5 years. So that is a big problem, and a big whole to fill. We’re trying to get students into those areas, and I feel very strongly that the pipeline starts at *pre-school* and works itself all the way up.

How early is too early?

As soon as they could comprehend!

So, could this be any day? Could it be Monday-Sunday?

My Space Days this year are 5 days a week and I’m going to 6 different school districts.

But can you pick the day?

Yes, you should go online and look it up—it’s spaceday.com. It’s usually on the first Friday in May.

So, this looks to me to be low-hanging fruit as far as calendars and facilitating partnerships with industry and institutes.

Yes, we have people coming from industry, academia...I’ve been doing it for 15 years and there’s a lot of areas that don’t know about it. We can go to every place, but we’ll put you on a list.

To respond to your query about speakers, I put on an “ECO Day” and for one day in the Spring I was allowed to create the curriculum for the whole school. And I called the state; I brought in 30 speakers. MEEP was part of it...

This was at Winthrop High School.

Yes, MEEP, state geology people came in. The state brought in a lot of people who had displays and gave talks. International Paper and another competing paper company came in. So we had a wealth of speakers. Another thing, for field trips...our Humanities/Latin teacher goes on a trip to

Europe every year, but one year she doesn't have enough kids from our school to be able to go. So, she picks up 10 kids from one school, 10 kids from another school, and now she has enough kids to supply the trip. That's another way to get enough kids to bring down the cost of a trip.

What was the lead-up time you needed to get set up for ECO Day?

The whole fall—I got permission in September and locked in the day, April 22nd.

So, from September, to execute in April.

Well, part of it was letting all the staff members know that that day was gone, and rain or shine it was happening. They gave me a lot of support and help.

So this is several months...

Yes.

So you need “x” number of months to do one of these events, to make those connections. That's good information for those that want to do this kind of thing in their classroom. I'd say this is a “medium hanging” fruit, let's use a banana...I do have a thing to add to trips, because one of the things that in the J-term internships and mentoring, if you can partner them up with professionals, sometimes, it may not hurt to ask a business...say you're going to Europe to look at architecture, maybe there's an architecture firm where someone has a couple of weeks of vacation time coming, and you need more people to come on this trip, is there an architect that can come along on this trip who can talk to us about what we're seeing? So, in my own thoughts, I'd add in more businesses, to get a professional to go with the group to bring that other level of expertise.

I'm X and I'm working for Educate Maine with this IT initiative that Mike Dubiak spoke of this morning. One of our struggles is that we know that STEM is “this big” and we want to support that stream of students coming through middle school and high school, then self-selecting into disciplines. At the same time, we want to be mindful that if we want to create some infrastructure, we want to keep it narrow. Mike and Educate Maine are very much focused right now on computer science and IT—future workforce. So, as we were talking about models this morning...have a specific target, have a whole product solution, try it out and then grow it incrementally. He looked at me and I said: yes, that's what we're doing. When I hear all this discussion about information we need, I think of a hub. So you would have this one website that you would go to that would link you to events and school programs and trips. In our case the hub would be computer science and IT, so we would have computer camp and internships for IT students. We'd like to get this built; we'd like to get this launched. We'd like to try it out, and then that template could be used in other disciplines as well. So I just want to throw it out there, as I see you building your low and medium hanging fruit; I want to give you the plantation you're working on.

Great! So all this is being built on something!

And I'm seeing heads nod—that's what I'm looking for: feedback. Does that sound amenable?

A couple of things to add to that: has anyone heard of the Reach Center? The Reach Center has been talking about trying to act as the "connective tissue" for all these STEM organizations, and I know they were looking at some kind of common calendar. I know the University of Maine has been looking at doing that. So I know there are organizations that are looking to do that, but I don't know anything more than that. I think it would be extremely useful.

I met with the Reach Center folks last week and the University of Maine is a partner with us, and we want one hub, not one at USM and one at the Reach Center and one from the business community. We're really going to push to create ONE, and pull us all together.

I know as a middle science school teacher...and I'm the learning head of our middle school, I know that we would be looking for people to come in to our schools and talk just for a couple of classes. So my question would be, on that site, would there be contacts and what would they be willing to talk about? Would they be willing to talk about stem cell research or some kind of physics? Have those contacts with those companies, so we can get the STEM in the classroom and get the kids excited about future careers and jobs, and how what they're learning in the classroom links to everyday. So I would say, if there's a way to put a spreadsheet in there. Sometimes it's hard to know who to contact at RiteExpress or who to contact at IDEX. You send these emails out and you never hear anything back. It sort of pops your bubble after a while; it's a great idea, but, uh, sorry!

I'm pumped because I can put another star here in our constellation of how we all want to be on one page and have this one wonderful resource.

Well, I teach AP Chemistry, so most of my year there isn't time. I think: oh, speaker...but what I did last year that was really effective was I took the time after the exam for the kids to take on a real-world problem which was toxic chemicals on turn-out gear for volunteer firefighters. It was mostly seniors, so we did a field trip to the fire house, which I think they'd also done as Kindergarteners. It was really exciting for them to see the stuff that they'd spent all year working hard on in abstract fundamentals. How do you connect that to real world problems? And I think that space, after the AP exams, is one of those spaces to connect another group of kids to the engineering side, the applied science side—which is just another way of making things exciting.

We also use that post-AP time for things like this, and I'm glad you mentioned it. Where do you teach at?

Horton [?] Academy.

I'm X from Maine Medical Center Research Institute and we're looking at doing more than just having interns in the classroom. I was talking to someone who is putting together a program

called “Maine Sparks,” as a resource to touch base with professionals, or scientists—wherever. They’re putting together these 1-minute videos in which the professional speaks about how excited they are to be doing what they do, so you can get a feel for the person and know if you are interested in having them in your classroom, either by video or physically.

Is that all disciplines or just the medical field?

All different disciplines...

So, it’s sometimes hard to find professionals that you want to partner with?

Exactly, and they weren’t originally thinking of bringing it into the classrooms, but they thought it was a great idea. So they’re going to ask people: would you be willing to be called to come into a classroom, either virtually or physically?

How is that disseminated?

They’re going to have a website. I guess they already have about 20 up there, but they’re just testing it out.

I think of the “It’s Gets Better” videos. You have a series of people saying “I am this or that.” That sounds like a similar kind of thing.

It would even be great if you just want someone to come into your lab for 5 minutes, to touch base.

I have a question for the business end of things: how difficult is it as a business professional to get time away to go into a classroom? Say, it’s a machinist shop, and you want to bring a machinist in to talk to your students about what goes on in their workshop. Is there anyone here to comment on that?

For me, I’ve got no problems for me; it’s my own vacation. I use my vacation. The difficult part is finding people who are willing to give up their time to come; that’s the hardest thing of all.

That’s a coconut!

It is the hardest thing... You have to find someone who has a true passion to go into these classrooms. My boss just took off the morning last week and went into a school in Westbrook, because he has a real passion for it. And even him; he has to use his vacation time.

Some businesses do give time for community service.

Yes, some do.

If you did it virtually, or through Google, it could take you only 10 minutes.

What eats coconuts?

Monkeys!

Ok, so I'm going to put a little monkey here, as a way for us to attack this.

Same is true for faculty or researchers—they have to use their own personal time.

Other ideas? I'm here more as a facilitator. MSSM has a unique calendar, but it is a residential school. But I'd like to start stirring the pot a little.

I want to put up there, something that UMaine and USM share, which is the Maine Engineering Expo. It is an annual event, happening in a February/March timeframe each year, right after National Engineering week. This is at engineeringme.com. The date is a little flexible, but it's something to keep in mind as a STEM event that includes a lot of things we've been talking about—speaks, really hands-on presentations and programs.

It's an awesome event.

What age is that geared toward?

Middle school—but we have so many engineers that bring their kids; so there are little kids there all the time having fun making marshmallow bridges and spaghetti towers.

Is that grades 5-8...

Another exciting thing is that we have a representative from Girl Scouts of Maine here today. Is there a way we can align some Girl Scouts activity with that? Because one of the things I think is important is that we have more young ladies introduced to the STEM field and feel very comfortable with the STEM industry. That's one of the things that MSSM summer camp focuses on, why we have two full weeks for females, it's because we also want to get them excited about STEM. Just having some of the planning people here in the run together, maybe there's a chance to move some stuff, to align it so that we're all on the same page.

I also wanted to mention that I'm on the Maine Girls Collaborative Leadership team, which is also focused specifically on girls which has a database of programs in Maine and the Girls Collaborative has a list of girls with specific expertise, time, money, etc.—all those different resources to make those opportunities happen.

I know up at Orono, the Engineering Department has summer camps, free summer camps. Now the issue is that some kids can't give up their summer jobs for a week. But I know that some of my former students who went to that camp became engineers because of it.

There's "Consider Engineering" which is a merit-based camp, and very competitive. There's CAD camps that are all to do with STEM. The Innovation Center up there [UMO] has an innovation camp; there's a physics camp.

Now I'm going to put on my devil's advocate horns and respond to something that you had asked about. Now we're talking about creative calendars, so let's get wild and crazy: what about year-long school? Now if you look here [pointing to chalkboard] there are these things that happen over the summer; what happens to those? How do those things have to shift? It's like a symbiotic relationship between out of school and in-school opportunities—how do things have to shift? I'd like you to run with this for a while.

I studied this in while I was in grad school and thought: oh, it will never work, too many objections, too many problems. But there are so many advantages to a year-long school and there are many different ways of scheduling. You can have overlapping schedules for students; you can have intermediate sessions—say 6 weeks in between the regular school sessions afford a lot of these opportunities. Plus by spreading it all out over the year, you get over some of the parents' objections about having to go on a summer vacation; it's cheaper if you go when everyone else isn't. But that family argument aside, being able to spread out teacher workshops, camps, other resources throughout the year, makes them more evenly available—yes, more expensive—but if we're going to raise all boats and make things available for more people, let's stretch out the school year.

I'm going to put my devil's horns on now in the other direction: Ok, so year-round school, high school, but let's now forget a college schedule and that would lead to things have to be shifted there, camp schedules....and those are the only two things that I'll put up there. I'd like to open it up to the room.

You're facing a lot of inertia, generations, centuries of inertia. But if you have the leadership, and the wherewithal to do it, you probably could do it, but the inertia is huge.

At the same time, being a stay-at-home mom before, and now my colleagues and I trying to work that summer schedule, get out kids into camps or have the nanny come—I mean the daycare aspect of it is very significant now. So, a thought is: start with the younger grades, and bring them on through with a year-round schedule? Don't try to change it all at once and let the kids lead the way into the year-round schedule

I was talking to another group about STEM activities and someone was saying that if kids are familiar with STEM in the younger grades, when they get to middle school and high school that mode of operation is that much more familiar.

The problem is that tourism is such a big part of the Maine economy and kids are part of the workforce.

Well, it's like in the County, kids have a different schedule because of harvest season.

There was talk at the legislative level at some point about getting all the calendars aligned, but it was a mess. I mean, harvest, that's a cultural thing up in Aroostook County and kids take those days to help out with the harvest.

Though, here's an exciting thing I thought about just for the County, because I live up there now, is during the harvest break they could do something similar to a J-term. Say: alright, you're on break, but you're going to do some kind of mentoring program either with a farmer, or with someone at Kerry Medical Center in Caribou. You could bring that into the fold; it's school but it's not school.

It's cool!

It's cool school. But I don't know if that kind of freedom is available down this end of the state because you don't have a harvest break. But it's something to think about.

What about virtual classes?

That exists. We have a couple of kids at the high school taking a course online because it doesn't exist at our high school

At UMaine, we're pushing more and more online courses, so it's all headed that way.

At Jackson Lab, we have a bunch of stuff we're putting online.

And at MSSM we're looking at putting a kind of tutorial, not necessarily a course, but a resource for people to use for a free statistics package.

Yes, digital schools—I don't know where to put that. Is that low-hanging fruit?

You should put a teenager's face there because they are the ones that are going to figure it out!

Any final thought?

How do we know when the Reach Center database is ready?

We'll let you know. I have to get my marketing plan in place, but we'll be on Facebook, listservs...

Another thing that may help with marketing is exponentiation: so here is UMaine, and they've got a list that they shoot out to, and someone on that list is at Maine Robotics and he has a list. So if you could have the lists piggyback...

Like a phone tree...

And it hits MSSM's list, then over here it hits Reach...

It's going to go viral.

That's the key, to bounce it off all these listservs, and then it explodes out there. OK, we've got to hit these questions.

#1: How do these conversations inform our understanding of what it looks like when we do STEM learning and teaching well?

Coming out of the silos....we really need to become a community.

Yes, you get feedback.

There are a lot of resources out there, but it's hard to know all of them, or to match up one place's "wish list" with all that's out there: oh, I want a certain type of speaker; there may be organizations that have those speakers, but making it match up is hard.

Part of that is if you think back 10 or 15 years ago, we weren't as well connected as we are now because of all the digital technology. And now that we're getting as connected as we are, we seeing this natural progression toward this community that we're talking about.

We must coordinate efforts to succeed. In Maine I think we have this enormous base out there, but we just can't connect the dots...

Or the stars....

We've got to find some way to connect the stars.

Maybe it's your drawings of the fruits on the board that is reminding me, but you know how you go to the store and see an ingredient that you've never used before, like a star fruit. I get all excited and buy it, then 3 weeks later I throw it out. But sometimes you get it and right with it is a card with a recipe, so you've got a way to use it. Or you may decide to use it some other way. For trying new ideas, we can be excited about trying a new idea, like bringing in a speaker or whatever it is, but to a certain extent, it's that weird fruit that at an excited moment that you pick up. How do we support each other in not just picking up the fruit at the market, but have enough of a recipe to really get it all the way done.

To implement it—like this Eco Day, we knew happened, but the details about who to contact to find out things like what did this Eco day look and how much time do I need to utilize? Yeah, I agree.

Or, Angie's List for STEM!

Yes, there you go!

3rd Question: given our different roles, what specific steps can we take to support STEM?

So, an Angie's List for STEM?

Yes, if we could have access to what your wish lists are; that would be very helpful.

Well that's what Angie's List does, doesn't it? Or Craig's List?

Yes, I've never paid for the service, but it does kind of match what you're looking for with a provider.

That would make it so much easier for everybody.

That's great; that's beautiful. Any other thoughts on Question 3?

The resource list.

The resource list---the constellation, bringing it all together.

So, if a central database---whoever created it--is to be developed we'll all want to contribute as much as we can to it and keep it updated. That's going to be the real challenge. If you really want to use it and make it a usable tool, we have to keep it current.

And the word I want to use for that is "open source," so it could be a like a public Wiki.

I talked to someone at IT for DOE at the state of Maine, and the state DOE is creating a single chat room. They're getting rid of all the smaller ones and creating a clearing house---but I'm sorry I can't remember the name of it...

So that's Question 3. #2 is: what do partnerships that support students look like?

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"K-Gray."

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Rigorous. Rigorous fun.

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This could go up in relation to the calendar

Mutually commitment to culturally sensitivity: schools being sensitive to business culture and business being sensitive to academic culture. We speak different languages; we carry some different values. We've had international residential students the past three years; it's wonderful, but it takes a real commitment.

Absolutely.

Creating new culture—that's the last word!