But today on across the fence a lesson in science that begins with a pinwheel it’s a lesson for teachers and it’s being taught by UVM extension four H educators for helping to expand and improve science education for Vermont kids. Good afternoon and thanks for joining us I am Judy Simpson. For generations the extension four H program has been at the forefront of the hands on learning. Nationwide four H teaches more than five million young people teaching an array of lifelong skills. Among them being proficient in science. The UVM extension four H program offers a host of science based educational programs for kids and extension also provides hands on training to a variety of teachers. Keith Silva tells us more.

This 4-H workshop went pretty much by the book. It’s about how home-school and after-school teachers can include 4-H’s science curriculum into the school-day.

Most often science education has the content and forgets the youth development piece.

While 4-H educators made presentations, participants listened and took careful notes. And when it came time for 4-H educator Debbie Fajans to speak only then did the colored toothpicks, tinfoil, and pinwheels come out.

Our job today is to design a better pinwheel.

This demonstration is designed to show teachers how they can include a ‘hands-on’ activity into formal content-based education. In this case, literally, turning a pinwheel into a lesson about energy and engineering.

Deb Fajans/4-H Educator: although teachers are doing a really fine job teaching to science standards, they are focusing in on just content which we feel can be improved by adding the 4-H elements of experiential learning. Teachers are really pressured to do things in a quick and expedient way, but we have proven that in teaching in this combined way the children learn better they form their own extensions of thinking to the content that’s being taught by adding the 4-H elements of experiential learning.
Across the Fence profiled Fajans’ work at the Kurn Hattin School in Westminster. Students there learned about genetics by getting a hands-on opportunity to graft apple trees.

Dylan Conklin/Kurn Hattin School Student: You can go and look at it in a textbook, but you’re not going to get the experience of grafting from a textbook.

Aaliyah Olmo-Gilmore/Kurn Hattin School Student: Well there’s nothing like it except for actually doing it in person you can’t ever get it without really doing the experience and it’s better because a hands-on activity I feel like you learn more and you actually get to see things and pick things out and it calls for a better conversation with the class and everything.

Fajans track-record of success combining content-based science standards with 4-H’s hands-on approach has been proven out in the ultimate final analysis, test scores.

Fajans: the first thing I see and everyone can see as well is the joy of learning and then in test scores afterwards they really do retain the subjects and the elements that I have taught because it’s imbedded in them in a different way. It’s not just mind think, but they have embraced it and made different connections that enforce that.

4-H’s approach to learning science complements how the home-school parents at this workshop teach their children.

Jen Higgins/Home-School Parent: our home-schooling model is that as our kids become excited about things we follow their lead and bring in resources that help support what they’re interested in help learn about what they are interested in and so as a home-schooling parent you have to have a big cache of resources and information to be able to support that.

Len Boston / Home School Parent: the application is good rather than read your chapter and finish your test because that’s not true learning that’s an introduction, but mastering the thing takes hands-on a lot of times as a feedback.

Along with demonstrating how 4-H’s science curriculum can enliven even the stuffiest science lesson these 4-H educators are also trying to change people’s perception of 4-H.

Lauren Traister/4-H Educator: 4-H is a tremendous resource in all communities in Vermont and across the country and many people don’t think of us as a resource in science, again because they’re stuck in this old concept that 4-H is an agricultural program. We’re really hoping that 4-H is a resource for schools and afterschools and home-schoolers to reach out and partner with us and that we really can help them advance their mission of quality science and we can then ultimately we all have the same goal of improving our youth science abilities it’s a win win all the way around.

Mike Ducharme/Para-Educator Barre Technical Center: I guess my correlation with what 4-H brought to kids or what kids brought to 4-H was through animal training or dairy products or just farming in general. There’s a much more broad diverse focus here and it brings in a much larger group of individuals. Curiosity brought me here. Curiosity’s going to walk me out the door. I’m going to continue to be curious and I’m going to bring that curiosity into my school and allow the kids to become curious as well.
Higgins: We can all use more resources so just to be able to tap into this huge library that they have which I never knew anything about. I mean you can Google anything, but that doesn’t make it good information and so by having something that’s put together by an organization like this that’s accredited and you know taps into science standards and that kind of stuff is useful, but it really just helps to add to the library.

You might say that at this workshop 4-H is putting a new spin on science and the new way for 4-H to educate Vermont children. In Burlington, I’m Keith Silva with Across the Fence.

Thanks Keith. With me now is Sarah Kleinman Sarah is the state four H program director with UVM extension nice to see you again.

Sarah.: Nice to be here.

Judy.: Four H science education programs are not new but is it fair to say that you're putting more emphasis in science?

Sarah.: Yes and no actually. I think a little bit of it is a branding emphasis on a national level. We have been doing science for years. The agricultural component that the video talked about in terms of what people think about four H. That's all science. What’s new is the intention behind it and some of the skills that were highlighting. The content has always been there but it's the context behind it being able to point out some of the elements what we're calling 21st century skills are imbedded in those activities is really that new focus. We've always had a three pronged mission science engineering and technology and mathematics to some degree healthy living and citizenship and now they're really all intertwined. Sciences imbedded in all of those. A lot of our GPS mapping programs we could be working with youth to develop a program around learning the geospatial technologies but in turn it could be a community service project to help the community out by mapping lost forest trails or whenever it may be. Again we're just focusing everything that we do in the context of science and putting a different emphasis around it.

Judy.: Why is this so important?

Sarah.: The U.S. is really falling behind in terms of test scores in compared to other countries around science. Our society is much more complex with things that were doing and problems that were solving are much more complex and developing youth and wanting them to be curious about a lot of what makes the world go and drive. If we don't develop that curiosity and inspire youth to ask questions is that inquiry based learning piece that we're trying to teach. They're not going to want to solve problems or figure out why things work the way they do to better them. Another example of the story like to tell a few years ago there was a teen event that we hosted and teen purchase a pincer giving directions to be there a specific time and said be somewhere at 945 in two students to and around and looked at me and said 945? Excuse me it was 1/4 to 10 I did and understand what they're
asking and in terms they did not understand what 1/4 to 10 meant and I said 945 and they
understood that so the ability to break down was very scary. It just reinforced the need to
speak to the very basic skills that are imbedded in science and the content that they're
learning.

Judy.: And hands on is so important.

Sarah.: It is. Again as the youth showed in the video that we watched everybody has a
different learning style. Be able to get out there and seen what it is that you're doing is
incredibly different and it gives you that ownership and pride I think in learning about it.
Then you get to practice what happens if I do this? And what happens if I do that? And try
different ways. The pinwheels that we're showing we had a whole piece talking about the
difference of why people will try different things to make them better than just your
average pinwheel. That piece stand with you a long time to be able to get down and have
that hands on learning. But again the experiential piece was one piece of it. The inquiry
based learning that we're trying to work with educators to understand allowing children to
ask questions rather than be guided directly by a facilitator adds to that ability to inquire
and understand and ask questions and be curious about different projects.

Judy.: That's really important to because a lot of education you're given the information
and you're not really encouraged to ask a lot of questions. Why this why not that? What
happens if this happens?

Sarah.: The whole process is intentional. We've been focusing a lot of professional
development with home school teachers after school providers and our regular four H
volunteers as well to understand we have always done hands on learning for a pitcher has
always done science but you can't just let it happen necessarily that's an activity. By being
intentional in what you're teaching asking very intentional questions and using this inquiry
based approach rather than saying fold this and then attach it here you let the youth try to
figure it out and ask questions what happens if I fall that here? I don't know why don't you
go ahead and try it to see what happens. It develops a different mindset and a different
learning experience that stands of you a lot longer.

Judy.: What about other forage programs? The clubs in agricultural services?

Sarah.: They all still exist absolutely and like the gentleman was saying we still have our
horse program our dairy program and again everything that we've always done still exists
and it's still a science but I think it's been upped a few notches by some of these new
frameworks that were including two understand these 21 century skills and by those skills
I mean measuring hypothesizing decision-making communicating what you think is going
to happen skills that we all know but again is the intention behind it and in pointing out
that you just learned was just a measuring. When we're talking about being somewhere at
¼ to 10 you're breaking down that our to 15 minute increments or you're looking at a dollar
and four quarters and really understanding how to break those pieces down to understand
those skills that are really important in any kind of setting across the globe right now. Our
shooting sports program we have of east a member right now that's been working on imbedding four H science and some of those 21th century skills into our traditional shooting sports program. Little by little we're making had ways but still offering everything that we've always been known for. Making it better but offering a lot of new programs as well specially in after school and out of school time.

Judy.: Because kids are interested in so many different kinds of things.

Sarah.: They are and again what we really want to inspire is that curiosity. If it's something that they're not interested in coming to then they will come. We've a lot of camps right now whether their vacation camps or summer camps that are titled mad scientist and CSI to get kids interested and have fun but the same time they are exploring. There doing various science experiments or their learning hard skills like GPS mapping and understanding why things work like that. But again there having fun at the same time and learning important skills.

Judy.: Also let's talk about leadership because that's really important.

Sarah.: Absolutely that's a huge focus. We know right now especially in some of the Vermont schools that leadership education is missing and while we work with some of the students two develop these after school clubs their able to take ownership and what they want to learn. There's a parent and that video that mentioned they look at the lead that their children take and then work around what they're interested. Having the ability with the students can take on leadership and have some choices in what they're studying decisions and where they want to go with that provides I think the ability for them two continue on with the science focus because they are there's that much more ownership over what they want to learn so it stays with them longer.

Judy.: And all the different kinds of programs that four H involves. It's always changing are always adding to that.

Sarah.: Again a student of and it's really what interests the youth out there today and we're just keeping up with that. We've offered a lot of teen activities and teen boards used adult partnerships type models because we want the leadership component there which dovetails into community service and citizenship. There's a new wave of study a longitudinal study from tufts that talks about the benefits of four H and we've always known that for each has given back to communities and four H is a way to give back to civic engagement but it's now I think three times. Four H purses appends that are involved are three times more likely to give back to their community in some way currently not just 10 years down the road. So four H is a really good thing. Kids are more likely to go to college and reach their goals so we're very proud of our program and I think the focus again of how are changing the contexts with the content is really adding to all of the work that we're doing.

Judy.: And volunteers are very important.
Sarah.: They are and we can't do what we do without them for sure. One of the challenges with the science agenda is finding folks that are science savvy and technologically savvy who can keep up with some of our projects. We have a lot of little robotics kits and the geospatial works and the digital photography. Well you don't have to be a science minded individual to facilitate some of these activities it certainly helps to find those individuals who can adds that additional element to some of our existing programs. So we're always looking for volunteers science minded or not because we can always train. People who are comfortable with some of the newer technology would be great. Then we're looking for resources too whether their businesses that can contribute that technology open up the business as a field trip to enhance what we're learning in the 4 h clubs or after school programs would be very helpful as well.

Judy.: If someone is interested in getting involved with four H or wants more information what should they do?

Sarah.: They can go to our website. They can also call our phone number 1-(800)-571-0668 and inquire about opportunities that can be short or long term.

Judy.: Sarah Thanks so much

Sarah.: Thank you.

Judy.: That's our program for today I'm Judy Simpson we will see you again next time on across the fence.

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