



## Episode 507 – Bob Phinney K5TEC Transcript

Transcript Funded by: Andrew Cornwall KF7CCC

**00:01**

Eric 4Z1UG

QSO Today Episode 507 Bob Finney, K5TEC

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Just a reminder that the response to my amateur radio events calendar has been great. You can get to it from a banner link in the show notes page. This calendar is updated by you and I hope it will be the most comprehensive amateur radio events calendar. Please use it and update it with your ham radio event.

If you are new to the QSO Today podcast, please be sure to look at the QSO today.com website where we have over 500 interviews with amateur radio operators. From there, you can click on links that take you to the QSO Today Academy. Our catalog contains over 500 videos on every ham radio subject. Completely searchable. My world is upside down. I write about it on my blog. You can get to it by clicking on the blog button at the top of the QSO webpage. More entries coming soon.

Bob Finney K5TEC created a new and dynamic after school science and amateur radio program called the New England Scitech, Inc. After his private school, where Bob taught for many years, closed his program from their lack of vision, K5TEC refocused his energies and built an amazing after school program for kids and adults that enforces STem learning and makes new and exciting amateur radio operators. Bob K5TEC tells his fascinating story in this QSO today.

**02:38**

Eric 4Z1UG

K5TEC, this is Eric 4Z1UG, are you there? Bob?

**02:42**

Bob K5TEC

Go ahead, Eric K five TC back to you bob.

**02:45**

Eric 4Z1UG

Thanks for joining me on the QSO Today podcast. Can we start at the beginning of your ham radio story? What was the hometown and when and how did it start for you?

**02:55**

Bob K5TEC

Brookline, Massachusetts back in the 1970s when I was a teenager, I was in high school, I think, but I didn't get my hand license. I have to admit, I started off as a CB e, and everybody goes, oh, but actually it's a gateway into radio, right? So I was into CB back in the crazy days of CB, and I had ham radio friends who kept saying, bob, get out of that stuff. Come up to the good world, the better world. It's like, get out of the dark side and get into the light.

**03:31**

Eric 4Z1UG

But even before that, Bob, was there an interest in technology and electronics even before you joined the CB, guys?

**03:38**

Bob K5TEC

Oh, absolutely. Yeah, absolutely. I think I got interested in technology back in the fifth grade. I had a science teacher who was very influential for me, who had cool gizmos. He had the newest flash photography. He had stuff that nobody else had, and it interested me. So I was into lots of technology. I didn't know what radio was, but, yeah, it started with an interest there, and I used to take apart stuff. My father's old cape art radio got antique. That would have been worth money if I'd been able to put it back together.

**04:14**

Eric 4Z1UG

So there was an early interest in technology. We're going to talk about stem pretty soon. But was there a kind of an inherent stem interest in Bob Finney in those days?

**04:26**

Bob K5TEC

Yeah, and I don't think the word stem or the concept of doing science in all disciplines didn't exist back then. But I saw science everywhere, and I think in my mind, it didn't matter that you just go into a language class separately from the science class. In the language class, you read about cultures and people inventing things back hundreds or thousands of years ago. Science is all around us. So when we get to the talking about STEM, I think people will see there's an interconnection everywhere. But for me, radio was just a natural extension of the fun stuff I was taking apart that had vacuum tubes and light bulbs and electrical wires in it and these funny things called resistors with stripes on them. And I wanted to know what that was for, and it sparked my curiosity.

**05:20**

Bob K5TEC

I think that's what we're trying to do with kids these days is a lot of it isn't teaching ham radio. It's getting the spark going.

**05:28**

Eric 4Z1UG

Did you have a favorite book, a technology book or electronics book?

**05:33**

Bob K5TEC

Well, I hung around Radio Shack a lot. I probably had every book that radio shack ever put out on transistors and how to build things. So building books were popular, but also the Sci-Fi books as well. I was into Ray Bradbury and Isaac Asimov and Arthur C. Clarke and the idea that you could one day be able to leave the planet and blast off and end up on another planet. That intrigued me as well. And how did they communicate? You know, radio was part of that environment. You had to imagine that there was some way of wirelessly connecting people and living in that world.

**06:19**

Eric 4Z1UG

In some of my research about you're a Star Wars fan, and I'm assuming that probably as a kid, you might have been a Star Trek fan as well. I always thought it would be interesting to understand if radio waves traveled at the speed of light, how you actually had real time communications intergalactically. That kind of makes you think that perhaps there's a way to communicate beyond the speed of light.

**06:42**

Bob K5TEC

Oh, I absolutely believe in possibilities. I think part of the fun of science fiction is to look at the science and then see that the fiction part is plain plausible. So for me, Star Trek was, yeah, it was out of this world, but at the same time, it's in our future. Yeah, maybe by the time we get there, we'll have these kinds of technology. And if you look at what Star Trek did, I'll tell you, they got a lot of people thinking, like, when doctor McCoy holds something over a body and scans it and stuff shows up on the wall, doctors around the world are going like, how did they do that? Thinking that it was real? And of course, that sparked the idea of CAT scans and MRIs.

**07:29**

Bob K5TEC

And we had Scotty beam me up with a little flip phone kind of thing, and that I couldn't wait to get my first flip phone. And so, yeah, Star Trek was, it permeated our electronics industry. We were just racing to catch up to what Star Trek was already presenting. The world of Star Trek, in your mind, is a world that you want to be in. And that's, I think part of the fun of communications is wireless communications is what you need to be able to get there. And finally, the phone lines were cut, and we finally got cell phones, and we're finally wireless. And now everybody's saying, well, we don't need ham radio because we got cell phones. So why are we doing radio? Well, I like to remind people that the cell phone technology is all radio based. So it's radio.

**08:24**

Eric 4Z1UG

So also, I think that what you may be saying is that these science fiction writers maybe foresaw the future, or maybe they create the future because we want to follow the direction that they've led. I think Arthur C. Clarke invented the communication satellite, or at least the communication satellite comes from his writing.

**08:45**

Bob K5TEC

Well, a lot of what Arthur C. Clarke did was very visionary, and he had a book called profiles of the future, I think, or. Yeah, I think that was the name. I read that one years ago. But he talked about what he saw as having happening in our future, and a lot of it. It's the keyword from Mythbusters. Plausible. If it's plausible, you. You see the future, you see the possibilities. All right, so compare that to Star Wars. Star wars is just fantasy. All right? So that's a whole different world. They don't even get into the communications. It just happens. Whereas Star Trek, you had devices. You had, they always explain things like, how do you do warp drive? And they had to have that dilithium crystal, and they had to. There was always science behind what Star Trek did.

**09:36**

Bob K5TEC

And I think that was why they developed such a following of Trekkies that they just wanted. They wanted to figure out, how could we really do this? And I believe that anything's possible. The speed of light seems like a limit right now, but it's possible that we just haven't discovered some breakthrough that is going to allow us to go a little further.

**09:59**

Eric 4Z1UG

Warp time, for example, warp space. I bet you own the physics of Star Trek book.

**10:06**

Bob K5TEC

And if you want the blueprints and.

**10:09**

Eric 4Z1UG

The blueprints to the spaceships, I do, too.

**10:11**

Bob K5TEC

I'm not that bad. I'm not. I don't go to conventions and dress.

**10:16**

Eric 4Z1UG

Up, but the books are pretty good.

**10:18**

Bob K5TEC

Yeah.

**10:19**

Eric 4Z1UG

Okay, so you had this early interest in radio as a teenager, and the gateway drug to amateur radio was Citizens band radio. What happened after that? How did you find yourself in the club?

**10:31**

Bob K5TEC

Well, my stumbling block for was the code. I had a little trouble with Morse code, and I think it's because I wasn't patient enough. My mind is always going so many different directions and always has been like that. And so I, when I sat down to study code, I just wasn't picking it up and felt like, why do I need to do this to talk on a radio? I already do. See, me. So it took me many years before I came back to that. But what happened in the meantime? Life happens. I got married, had a child. My son had no interest in the things that I was interested. He liked Sci-Fi and he likes Star Trek and stuff, but he wasn't, as he's not interested in the sciences. And that's okay. He's doing his thing.

**11:16**

Bob K5TEC

But later on, as we, my wife and I were a little bit more empty nesters, she said, you know, you used to get into that radio stuff, and if you want to do that, you can do that. I said, oh, I thought you wanted radios out of the house. And she said, no, I want you to be happy. Go buy a radio. She actually bought me a scanner for my birthday one day, and I'm listening to police and fire calls like I used to when I was a teen. And it just sort of, I got back into it, and this time they were just about ready to drop the code requirement. And as soon as that went away, I was in.

**11:54**

Eric 4Z1UG

So that would have been like, what, the early nineties, perhaps late eighties?

**11:58**

Bob K5TEC

Yeah. The exact years I forget. And I. I think I've renewed my license for the third time now. So I just recently. So I'm good for another ten years. My license.

**12:11**

Eric 4Z1UG

When you left high school, what did you do after that? What kind of education did you seek and what kind of profession did you go after?

**12:21**

Bob K5TEC

Okay, well, I had a lot of interests, and I applied to a number of schools, colleges got turned down by MIT. I didn't have the math high enough. I got accepted to Harvard. And I really, I'm not sure. I think I would have been happier at a smaller college and accomplished more, but, you know, that's a great name to have associated. So I took it. I went to Harvard. What's interesting about what Harvard was doing at the time was they had a new program that I would say would be a leader or precursor of our modern STEM program. Now, for college. Most colleges I interviewed at you had the chemistry department doing its thing, and then, no relation, but you had a physics department over here, and you had the arts and sciences building or the arts building way over there.

**13:17**

Bob K5TEC

And they did not mix at Harvard. They had the Carpenter Center for the Visual Arts. And it was right near the architecture center and right near the science center. It was like a triangle of three buildings. And they brought the three together and they said, we're going to start this new program. They were accepting 24 students at a time. And I applied. I had to have a portfolio. Fortunately, I had done a lot of photography. I had worked at the New England Aquarium doing photomicroscopy for a while, and then I also had been in high school following fire departments around and getting all this cool action photography for fire departments. So I had built up a good portfolio. So I was into the arts. I wanted to be a graphic designer at one time. I also wanted to be a marine biologist. The aquarium.

**14:10**

Bob K5TEC

And I looked at this. I said, wow, they're actually mixing the sciences with the arts and architecture. I could handle that. And so I applied and I got accepted and it was great. It was a three way department that I would consider STEM. I got to do art, science and architecture. And when I finished the required courses, I could take any science I wanted. And I took geology, archaeology, anthropology, astronomy. If it had an ology after it, I just take it, you know? So it was fantastic for at that time, a kid like me who was interested in just about everything technical. And then I left that and got married and fell into teaching. I never planned this.

**15:03**

Bob K5TEC

I guess I could have been anything, but I was asked to help out and substitute for a school nearby that I actually went to, Dexter school. I went there as a kid and I filled in a couple of classes to help out because they had some emergency. A teacher had a heart attack and they didn't have substitute teachers in those days. So I went back and I helped and I taught a little bit and I liked it and I taught some more. And next thing I know, I stayed. And I stayed there for 38 years. So I just love teaching. I think it's not as lucrative. And if you're after money, there's other jobs. But the rewards in teaching is to see other people, particularly children, working their way up, becoming the next generation of scientists and astronauts. Inventors.

**15:58**

Bob K5TEC

Yeah, I taught science and taught English and Latin. Yeah, classical. I teach classical Latin as well. And it's really rewarding because of my diverse education. I can pull it together into what we call STEM and say, you know, we're not going to go do science over here and we're going to do language arts over here. We combine them and we learn that the Romans invented the most durable concrete ever. And how did they make water come from the mountains down through a valley and back up the other side to get to the city? There's science everywhere, even in Latin.

**16:38**

Eric 4Z1UG

I'm married to a teacher as well, who's been a teacher for 40 years. What I think that I appreciate about her being a teacher is that we cannot go out anywhere without running into her former students and them saying how she changed their life. Maybe there's no other

profession that touches people in such a way that they just remember your. I remember all my teachers years ago.

**17:05**

Bob K5TEC

I remember all my favorite teachers. Well, I remember the ones that didn't work out as well too. But yeah, they're in every profession you have, people are really good at it and some people that aren't as good. You have lots of people that have the knowledge but don't know how to make it clear to other people. You have to be able to dispense that knowledge, and there's a trick to it. And so what I did as a teacher was I tried to emulate the positive good style of the good teachers and try not to do the stuff that the rote learner type people sit here and memorize these, this declension. I make latin fun. So that's what I took from all my teachers.

**17:50**

Bob K5TEC

I'm hoping that all my students are taking from me an enthusiasm for the sciences and the technology and the world around us.

**17:58**

Eric 4Z1UG

Now, you seem like a relatively young guy, so why retire after 38 years? What changed that caused you to go a different course?

**18:09**

Bob K5TEC

Well, the administration at the school had changed over a little bit, and they were not as pro science as they had been for many years. And there was a science center there that I had built. I helped from the very ground level. I helped design it and then brought in architects and expanded on it. It's a really great science center. And the new administration was just kind of shutting things down and shutting down a lot of my programs and trying to say that there wasn't much for me to do. And I had accumulated a lot of my own stuff at the school. I had brought in an full size r robot. I had meteorites and rockets and telescopes and things that.

**19:03**

Bob K5TEC

That were personally owned by me and a few of my colleagues who were on a mission to try to do a good job with the teaching, despite the schools not wanting to spend a lot of money on coal meteorites and stuff like that. And so we didn't see eye to eye that the new administration and a lot of us left. And the school told me that I could not have my own equipment there. And I said, well, be careful. That's. That's what's running your programs. Here is my equipment. And they said, well, you shouldn't have it here, as they thought of it, as a liability. And so when I left, I took everything with me because they told me to, which was great. I put it all in storage.

**19:43**

Bob K5TEC

And then one of my former students, actually, quite a few of my students complained because when I left the school, a lot of the programs, they shut down immediately. We had a ham radio club there that had been running for 16 years. We had three. Yeah, about 320 members,

and twelve of them were astronauts that had visited and had lunch with our students and things like that. All of those astronauts were ham radio operators and signed on as an honorary member. We had 42 students in our school that had amateur radio licenses, half of them a little more than half, 60%, I think it was had at least a general and four of them had amateur extra. And these are students, this is a grade level school.

**20:33**

Bob K5TEC

The high school level was just starting to expand out and the high schoolers were busy with other things. It's hard to get high schoolers to commit to, but the grade level grade school, the middle school kids, six grades, 4,5,6,7, maybe eight, we're so into it. And the whole reason we started an amateur extra class and taught it was because a bunch of kids said, we want to go there. And I said, are you sure this is going to be hard? Yeah, they 6th graders, amateur extra. It just goes to show that there's no age limit for amateur radio. I mean kids can do it's just they have to be motivated. And so we have amazing radio club and the school shut it down, they just turned it off one day.

**21:19**

Bob K5TEC

And the poor students who had just been elected at the annual meeting, elected officers of the club, and one of the kids was going to put on his college application that he was now the president of a Ham radio club at school, you know, it all fell apart for them and they came to me and I had already started to prepare to leave. We had this place already and we're saying, I think we have a place in Natick where we can restart the club. And it was one of my former students who actually showed me this location. He had become a real estate agent. The student who is the real estate agent took me to this place. He said, come look at this place. And he said, can you imagine your science camp reopened here?

**22:05**

Bob K5TEC

Twenty four seven, I mean, you know, and yeah, so we took everything out of storage, we opened up and in two weeks were open for business and it was an amazing place. So the Ham radio club got to come here and restart with a different name, of course, but we restarted, all those kids could carry on.

**22:24**

Eric 4Z1UG

And now this mid show break, every two weeks I listen to the Ham radio workbench podcast with George KJ6VU, Vince VE6LK, Mark N6MTS, Thomas K4SWL, Michael VA three MW and Rod VA3ON, and their guests on often topical and important projects in amateur radio. This discussion amongst the regulars and their guests remind me of the conversations that I used to listen to on 146.94 and 146.46 MHz in Orange County, California while working on my own workbench almost 50 years ago. It is amazing how much practical ham radio knowledge that we can absorb by listening to the Workbench podcast. That starts to make sense when we start our own deep dive into our own projects. So join me by listening to the Ham radio Workbench podcast now.

**23:19**

Eric 4Z1UG

And as George and crew push beyond 200 episodes, you can get to the Ham radio



Workbench podcast by clicking on the banner in this week's show notes page. And now back to our QSO.

**23:33**

Eric 4Z1UG

The administration coming and shutting down your program. Did you see this as a trend across the country in terms of administrators or schools or educators? Because I remember growing up when industrial arts and the sciences and music, you know, all of the things that I think make educated people, all of those things were taken out of the schools. Maybe it was this idea that everybody's going to be on the college track and they're going to learn liberal arts and whatever else. But did you see that as a trend across Massachusetts at the time, not just your school?

**24:09**

Bob K5TEC

Well, at that time, I wasn't as tuned in. I worked at a private school, so I wasn't as tuned into what the public schools were doing. But I do know that the Natick high School, the town we're in right now, used to have a ham radio club, and that went out the window about the time you're talking about back when they started shutting down the music programs and things like that. I think part of. Part of what the problem is, and it's very complicated. Everything's interconnected. But we had some very bad leadership at the very top over that time period. I'm talking about the president who kept saying, science is bogus, that don't believe in science, that you can cure Covid by putting uv light somewhere where it shouldn't shine there.

**25:03**

Bob K5TEC

The downtrend at our school, I used to tell people, is like a parallel to what's going on with the government, where everybody's being mean to each other, everybody's downplaying science and trying to just get ahead. Like, stomp on the other person, call them names, just do anything you can to get ahead and forget about the values of knowing how things work, knowing the education. I mean, the misinformation that started flying where valid scientists who have a new breakthrough or discovery are getting shut down by the people who think they know better, who actually don't. They're armchair scientists, and they believe in things that they can't prove, and they want to really, I don't know what the motivation is, but they're always stomping on the other guy.

**25:55**

Bob K5TEC

And that's exactly what happened to science at our school, was it was not popular anymore, and the school went towards an area that was more popular and stomped on us and basically shut down everything.

**26:09**

Eric 4Z1UG

But it sounded to me like the radio club at your school had a huge support of not just the students, but their parents, perhaps people from the community, ham radio operators from the community, you say? The astronauts that were also members.

**26:25**

Bob K5TEC

This is Katie Coleman. We had twelve of them find their autographs and officially join the club.

**26:34**

Eric 4Z1UG

It sounds to me like your school couldn't have had a better booster club for supporting the school in a bunch of other ways in addition to the amateur radio club. So you're out of that school within a very short time. You found this new property when we first started. I kind of got a little bit of a tour. As you're moving your laptop through the building, what do you have there and what is it called, and what did it take for you to put it together? It looks like maybe you just emptied your warehouse.

**27:01**

Bob K5TEC

Yeah, I had a lot of stuff in storage because I couldn't fit it in my house, but that was because I just kept. I have to backtrack a little bit. My wife and I had an agreement that my salary would go to the family, but I also drove a school bus on the side. That was how I got to work every day, and that paid separately. So that was my. She allowed me the fun money to buy meteorites and radios and things like that. So I had accumulated a lot of stuff over time. I didn't just go out and spend, you know, hundreds of thousands of dollars on stuff. The. So when I had to leave the school, so suddenly I just packed it up and put it away.

**27:43**

Bob K5TEC

Finding this place was great because I didn't collect this stuff for me to hang on my wall. I collected it to hang where people could see, particularly youth, that I was trying to get them interested in the sciences. And so when we opened up here and we just covered the wall, I could give you a tour later. There's astronauts up and down the walls and everywhere, and even in the back here, there's radios all around this room. This is our radio room, by the way. Yeah. When we opened up, it was very quickly. I had a bunch of former students and some current students as well, and some families behind them who all had believed in this mission of restoring what had been suddenly shut down.

**28:29**

Bob K5TEC

When we opened it up, we didn't really know exactly what we wanted to do or what were going to focus on. I was just recreating the science camp that I would do every summer that had things like robots and ham radio and a variety of STEM sciences. And at the time, I just didn't really have a plan. It was really just, here's a place, it's available, grab it because it's on the top of a hill. Ideal for ham radio, ideal for astronomy. We can wheel a big, huge telescope in the other room out onto the roof. Not the roof, but a terrace that's up high above the parking lot. And we have a beautiful view of the southern sky. So the moon, the planets, everything that moves out there.

**29:14**

Bob K5TEC

I could recreate what I had been doing at the school, and the school shut down everything. Their loss, our gain. We have everything. People started coming here, and that's, I think the best thing is that we can evolve and adapt, and we did that. I had never known much about

homeschoolers, but they need education too. We provided that. I was suddenly free during the day, and that's when the homeschoolers want to meet. So after school programs, evening programs, weekends, lots of opportunities could sort of just blossomed here.

**29:53**

Eric 4Z1UG

I am so enthralled. You're doing exactly what I would love to be doing every day, all day. So what's the business model there? Is it a nonprofit organization? Is it a business? What did you end up doing in order to keep it going? Because you have a beautiful website, it's loaded with activities. I mean, I was looking at your calendar for the next few months. I would take every class if I was a twelve year old. I might take every class if I was a 67 year old. But tell me, what's the business model there?

**30:25**

Bob K5TEC

Well, being a teacher or having been a teacher, I still am. I consider myself a teacher because I'm still teaching. It's just not out of school. I just. I wasn't in it for the money as I retired. My wife's got her thing, my son is off on doing his thing. So it's kind of like a hobby for me. I said, I'm not here to make money. I'm here to make people happy and do cool science, like cutting edge stuff if we can, if we keep doing that. So I decided nonprofit. We went for a 501 c three. We got it.

**31:01**

Bob K5TEC

You know, we have a board of directors, and we have a leadership team, which is consists of a lot of people, a lot of them educators, but also in the industries, people who can help out and volunteer their time to cover some of the areas that I personally am not as strong on, like physics or math or something. And it just sort of materialized and we evolved. We literally had to evolve because for one thing, Covid hit right in the middle of everything. So were here we are startup just. Just about getting our 501 C three and Covid hits. And so very quickly, we had to change gears. We closed down for a year and a quarter.

**31:47**

Bob K5TEC

Physically, we followed what the Natick school system did because we didn't want to get shown in the papers as they give the COVID outbreak at this little place. So we decided to hide with these schools and do what they did. And so for a year and a quarter, I went online. The neat thing is that everybody else in the world had to do the same thing. They were all sitting at home, too, going like, gee, if I had my ham license, I could at least be doing ham radio. I wish I. And, you know, people who had nothing to do are now looking at hobbies and saying, I wish I had my ham license. And so that's one thing I teach. I've been teaching it in house. And everybody kept saying, bob, how about a, what do they call them?

**32:38**

Bob K5TEC

An outreach model or something? The word zoom wasn't in our vocabulary yet. And they said, teach to the world. And I said, no, I've got all these people around us who come in for classes. Why would I do that? And all of a sudden, I had to do that. So I started teaching two or three classes a day. Five, six, seven days. Well, I took one day off a week, but almost 24/7 teaching all these classes, and they were full with people from around the US, sometimes in

other places, people who were stuck. Remember Covid? Shut up. While people, Americans were all over the world. So I had people in Japan and South Africa and Amsterdam taking my classes and taking exams too. We were the first ones in the country to officially get FCC and ARR approval to do online exams.

**33:33**

Bob K5TEC

And we started doing them like crazy because amateur extra was about to turn over, like, you know, middle of the summer, everybody who had been studying for a year or so, and they couldn't get their tests. What am I going to do? So were doing amateur extra tests, exams. So I was giving 30, 40, 50 exams a day. I had a team from around the US that would regularly zoom in, and we'd gather and we'd bring people in to do the exam online. And we trained a lot of other places to do it, but it caught on slowly. There were at one point just a handful of us doing it and trying to keep going and getting these requests. I'd have backups where people I just couldn't get in. I couldn't fit them in my schedule. I had to go to sleep sometime.

**34:27**

Bob K5TEC

So there's where ham radio kind of took off for a while, and then the world opened up and everybody went back to work. And my classes just plummeted. They just, I had to cancel classes because I had no one in them. And that was, wow, a wake up call. Oh, I guess we better open up again too, and start up. And here we are, startup all over again. So that was a rough point. But the good news is that by going online, it kept us alive because I had to pay the rent. Even though weren't using the place, the landlord had to keep paying his mortgage. And so, yeah, the money still has to flow and we kept it going with ham radio.

**35:12**

Bob K5TEC

And I'm pleased that so many people got a ham radio license or an upgrade or an exam during that time period that were all stuck at home. And I hope that those people continue and keep the hobby. But when we get busy and we're back and doing life and going on vacations and stuff, sometimes it, sometimes people lose interest again. One of the toughest things is to hold their interest.

**35:38**

Eric 4Z1UG

I noticed that you, on your website, your operation has some repeaters, repeater channels. Is that a way for your community to kind of stay together and talk about ham radio together on the air?

**35:52**

Bob K5TEC

It would be great if I could say so. But no, I don't think much changed. Repeaters are just not as popular anymore because everybody has cell phones and they can text back and forth. So the idea of meeting up on a repeater at a certain time, because you can't call someone, you gotta just be there and be on the repeater. That doesn't appeal to people as much anymore. There are old timers who are always there, but I didn't see the new people jumping in on that, and I still don't. And I do have. I get grant money that allows me to give away free radios to anybody in college age or younger who get a radio license. And that doesn't help either.

**36:38**

Bob K5TEC

They get the radios and they think it's cool, but I don't think the, I don't think that's really much of a focus anymore. Our repeater just, you don't hear it going right now. It's just there's nobody on.

**36:51**

Eric 4Z1UG

But it looks to me, based on the preliminary tour that I've had, that you're pretty busy, that you actually have all kinds of people that are coming through your place. What does your day look like there in terms of a typical weekday? Who are you catering to? Who's coming, who's taking courses? What's the age range?

**37:10**

Bob K5TEC

Well, in the mornings it's homeschoolers in an age range of middle school to early high. But by the time they get up into high school, they're usually heading off to real high schools. So it's mostly, well, we accept fourth grade and up. I know there's a lot of homeschoolers that are younger. We, we don't start until fourth grade. So fourth grade, six, seven, eight, I'd say four through eight or four through nine is about our sweet spot. And then about mid afternoon, we're into either a combination of afterschoolers who are on early release days, or sometimes it's just more homeschoolers taking another one of our programs. And then early evening or late afternoon, early evening are other workshops that we offer that might be on electronics or woodworking and manual arts. We have a wood shop and that's popular.

**38:05**

Bob K5TEC

So weekdays, yeah, it's pretty much all about homeschool and after school and mostly local kinds of things, although I do teach some on Zoom kind of programs as well in there. But we have our ham radio meeting every Tuesday evening at seven. So that brings ham radio people together. Thursdays and Fridays we have a lot of makers coming in and building stuff. Mostly kids. Kids are all about weekends. Most kids don't. They can't travel far. Parents are busy, they're cooking dinner. So kids don't get out a lot in the weekday evenings. So we purposely load the weekends with kids activities. So a typical weekend, you're going to find inventors workshop for youth, you're going to find classes on Arduinos, classes on high altitude ballooning.

**38:56**

Bob K5TEC

We have this stratoscience class that you take pretty much three quarters of a year, building projects to fly at the edge of space on a balloon that we launch once a year. Well, actually we launched several during the summer, but one big one to the edge of space. And we put something like last year the kids built a repeater, homemade repeater, out of portable radios with circuitry. And we launched that up and any kid who had a license could transmit through the balloon and back to earth. I mean, really cool stuff that gets kids interested. They're not in it for the repeaters, they're not in it to talk around the world. But if you say you could talk through a balloon that you launch and yeah, that got their interest. They're building little Arduino projects that sense the atmosphere.

**39:45**

Bob K5TEC

I've got one kid who's got a glider that's going to launch from the balloon. And he's developing the circuit board with the electronics that will allow it to home in on its return signal and it'll fly back to its location. Meanwhile, the balloon takes off and continues on. I mean, it's stuff that I personally don't even know how to do. I got a bunch of volunteers who have the expertise who help these kids do this. I'm just organizing those classes because they're already above my head. Got one kid who's a 13 year old who has invented a four layer circuit board that will track his high altitude balloons. This is a kid who's launched, I think, eight balloons now in his lifetime, since age ten. And he's in our club and he's actually teaching a lot of the classes now.

**40:34**

Bob K5TEC

And these are the kind of kids that we attract because we have that kind of like we'll go wherever you want kind of thing. We're not just sticking to the curriculum. We're not just doing the MCAS exam stuff. We're going to let you go wild here. These are kids that are bored in their regular schools, and they come here for excitement, and they are doing cutting edge stuff that they can talk about on their college applications. And that's the kind of kid that we want to see here. Those are the kids we're helping out now.

**41:05**

Eric 4Z1UG

Do you think your community is unique? I mean, do you think you've got an overabundance of egghead parents connected to the high tech industry or whatever? Or do you think that you're just kind of a regular community and the schools perhaps are failing to keep up with these kids, and therefore this presents this unique opportunity to you.

**41:26**

Bob K5TEC

I think it's a little of everything. Everything's interconnected. It's hard to say. I don't have a lot of egghead parents. A lot of these parents just understand that for their kid to get ahead, they've got to have something unique. You can't just be a good student, play a sport, play a musical instrument anymore, and get good grades. You got it. The competition for college, a good college is so great now that you really have to distinguish yourself. So if you can say that you've flown a project to the edge of space, or you've done our cubes in space program, where you got to fly a cube sized project on a NASA rocket that launched out of wallops Air Force base, we do that program, too. This is stuff that colleges look at and say, whoa, this kid's got some.

**42:10**

Bob K5TEC

He's ahead of the curve here. And also, it's fun. I mean, science should be fun. Learning should be fun. Learning should not be tedious. People should enjoy going to school. Now, I don't want to criticize the schools we have. I think the whole american system could use an overhaul, but, you know, look at some of the other countries that are doing it. Right. But, but still, it's tough when you have a wide variety of people. They're, they're trying to mainstream everybody, and it doesn't work because what you really need to do, and I'll get a lot of hate mail for this, but you really need to teach to the top of the class. And there are so many

people that want to put all kids together. Everybody's equal. But really, we all learn at different rates. We all have our different ways of learning.

**43:01**

Bob K5TEC

Some of us are tactile learners. Some of us are visual learners. Some of us have to hear things before we understand. And you can't be all things to all people. But if you have a kid who's excelling, I think you got to give them the opportunity to excel, and the rest of them will keep them going. We'll keep plugging away. I don't mind teaching to the lower end of the class, too, but it's just that there's a separation. The kids at the top who have the potential to go far are dragged down. Having them in the class is doing them a disservice. And a lot of people will say by having them in the class, it helps the others pull up, that they don't feel like the dummies, that they're in a fast moving class.

**43:47**

Bob K5TEC

Well, the problem is we're moving too fast for some of those people, and they need to slow down. And so we really should be teaching everybody according to their needs. And when you have bright kids who have new ideas, one kid who just, he's got an idea how to solve the CO2 problem in the atmosphere, and he's building little things to try to experiment. We need to help that kid figure this out because he may be the one who invents a way to get the CO2 out of the atmosphere. You can't hold them back.

**44:21**

Eric 4Z1UG

I'm thinking I'm in the wrong business because it seems to me you're in the right business. So you actually do then have a large number of volunteers. Who, they come from the parents or they come from the community? Do they come from the amateur radio community, perhaps the seasoned people. Where are you finding your other volunteer teachers, are they coming to you because they see what you're doing and want.

**44:43**

Bob K5TEC

To be a part little of everything again? It's all. There's all this interconnection. There are parents who have kids who are in the program, and they just can't wait to help. And they feel like me, hey, I wanted to do this when I was a kid. Now my kid has the opportunity. I'll be there and help him or her. And there's also people from industry. I am very fortunate to have a few people who work in the microchip industry. Or I got a guy who works at a rocket company nearby, and they volunteer because it's kind of encouraged that you give back to the community. And sometimes they can get funding, too, which is cool. They are encouraged to go out and make a difference at some nonprofit somewhere.

**45:28**

Bob K5TEC

And the company will put a couple thousand dollars towards that company on behalf of their employee. So the employee has fun. They feel gratitude of helping other people, and a little bit of money flows into the program that they're helping with. So it's a combination of lots of those kinds of things. So it's. And there are volunteers at all ages, too. I have high school kids who will volunteer because they need community service hours. And although working at a soup kitchen is a noble thing and I don't discourage anyone, there are kids who just would

like to work at a place that. Where they can teach, share their knowledge. If they're good at coding, they would love to teach some younger kids how to code. Plus they're building up their leadership, their responsibility. They get a good recommendation from me on their college application.

**46:23**

Bob K5TEC

And for them, it's another way of setting themselves apart from the average student. It helps me because now I have young kids helping young kids. Sometimes the kids don't relate to old guys like me, and they would rather have a teenager saying, hey, I'm in high school. Here's what we're doing. And the kids are going like, oh, cool, someday I'm going to be there. I want to be like you college kids. And I welcome the old timers as well, because the longer you've been in science, the more you have to contribute and give back.

**47:01**

Eric 4Z1UG

Are you the amateur radio club in town now?

**47:05**

Bob K5TEC

No, there's lots of them in the area. There's next door to us, literally. Wellesley, Framingham to the north is just in this whole area. We're saturated with radio clubs. It's just that they're not typical radio clubs, at least around here, they don't have a home base. They're not paying rent to some facility. They don't have a radio room. They meet at a library or community center once a month or once every other month in some cases. Or by zoom now, because nobody wants to get out of the house and because of the aging population, the average age of some of these clubs is around the sixties, the seventies, and there are plenty of those clubs. So why us? What are we doing differently? For one thing, I've got a radio room. You can come in here and use it if you're a member.

**47:58**

Bob K5TEC

It also is a showcase for new people who come in for other purposes. They look in here and go, wow, what's going on here? I want to know. So it's nice to have a physical location. It just costs a lot to keep it. But we have a lot of youth involved. I can't say we don't have. We do have a lot of adults, so adults love to be part of our club, too, and they are often members of all the other clubs as well. The difference is we meet once a week. We meet regularly. We have lots of guest speakers, usually two a month, on various topics, all sorts of topics. But we also, when we get together here in person, we've got the makerspace, we've got tools. We can build things. We can make antennas.

**48:42**

Bob K5TEC

You can buy antenna wire from me if you need it. And let's go down to the youth level. Got a lot of youth getting their ham radio licenses, and they show up at one of these other clubs and they're sitting around the room going like, who are all these people? I'm the only kid in the room, and they're out of there in a flash and often don't come back. And that's one of the problems with our regular clubs these days, is they're trying to attract youth, but you got to get to a critical mass where you've got a bunch of youth who all like to hang out together and do stuff, because when you get one or two new hams and they sit in the meetings where



they're talking about the way stuff used to be, remember the days? Remember when tubes were king?

**49:29**

Bob K5TEC

And the kids are going like, I'm out of here. I'm not having anything to do with this. So we provide that. So I'd say in the whole area, we're probably unique in a sense that we have a youth and family based club where kids meet other kids and do things together and they feel safe that they're, they've got other like minded students that they can relate to because sometimes they have a hard time relating to the older adults who keep talking about the way things used to be.

**50:02**

Eric 4Z1UG

What kind of support do you get from perhaps the national amateur radio organizations, for example? It seems to me that you'd be the ideal teaching environment for the ARRL's teachers Institute, for example, where they bring in teachers from around the country to teach stem.

**50:21**

Bob K5TEC

Yeah, they're not too far from us. They're in Connecticut. So if they were in California and we're in the east coast, maybe we'd work a deal where we become a location more local for some teachers. But I'm not competing with them in any way. We don't send teachers down to them because really we don't have that many people who could. I'm the guy that teaches all the ham classes and they know me and I don't need more training. So I think we're kind of at a status quo. We support them as much as we can. We're doing our exams through ARRL and doing a lot of them. We do four exams a month, alternate Tuesdays, alternate Sundays. So I have people driving long distance to come to us and I say, why would you drive such distance? There are exams in your area.

**51:09**

Bob K5TEC

And they say, well, I'm ready to take it now. I don't want to wait another month. It's like, okay, so we provide a service where we're busier. We offer more things on a regular basis for youth and families. When kids interests change so quickly, once they're captured and they want to do ham radio, we want to be ready to do it. We don't want to do one class a year like some clubs do. We don't want to give an exam once every other month. We're up and running.

**51:43**

Eric 4Z1UG

Do you receive grant money from ARDC?

**51:46**

Bob K5TEC

We do.

**51:47**

Eric 4Z1UG

So they recognize valuable contributions you're making.

**51:51**

Bob K5TEC

Apparently, I don't get much feedback because they don't talk directly and they don't give you too much feedback on the grant itself. You know, I'd love to say, which parts did you like? Which parts didn't you like? Because I'd like to write it a little better next year. But we've received two different grants over three years. One year, skipped a year, another year. And our grants. When we write what we're going to do, it's not, hey, we're going to get more kids into ham radio. Yes, we're going to do that. But we don't. That's not the, it's hard to put, you can't walk up to the kids and say, hey, guess what? You can talk around the world on ham radio. And they're going to go, like, I have a cell phone. I can do that. You know, why do I care?

**52:35**

Bob K5TEC

The kinds of things that got us excited when were youth, like the idea that somebody could make a phone call from their car on the way home, whoa, I want to do that. But now everybody's got a cell phone. How do you compete with that? So for kids, the end goal, the means is not ham radio the end goal. Of course, we want ARDC to help us fund this kind of program that we can't do by ourselves. We just don't have the money. We don't want to be charging kids a lot of money to take a program that they don't even know if they're interested in. But if ARDC gives us money to lower the prices or make it free for kids and get a free radio when you pass your exam, yeah, we'll do that.

**53:19**

Bob K5TEC

But along the way, they recognize that they will help fund the Arduino class, the electronics class, some of the other stem classes that are around the wireless communications. So we don't go to the kids and say, hey, guess what? We're going to get you a ham license. They don't care, at least not at first. We're going to teach you how to do Arduinos program coding. Oh, yeah, I've been wanting to do that. And once they're into that and they realize they can start doing some robotics and maybe even wirelessly control that robot, and they start to see, ooh, wireless. That's. I need that for robotics. I need that for self driving cars, things like satellites. Oh, yeah, wireless. Wireless. Kids are into space technology. Wireless, you know, everything's wireless.

**54:11**

Bob K5TEC

You'd think that in this day and age, ham radio would be more popular than ever, because it's the groundwork that lays the foundation for wireless communications. So my point to ARDC is, help us fund that concept. First. Let's tell the kids in your future with robotics and cars and satellites and stuff like that. You want to be able to transmit wirelessly. You want to be able to experiment. You need the license and the tools and the knowledge to do that. We'll help you get there. ARDC recognizes that, and so they're helping us with that. So I have a ham radio is not the single thing. It's the whole stem concept. We bring the kids in to do Arduinos, and then they see the radio room and they ask about it. And then after a few iterations, we're there and they're learning. Ham radio.

**55:06**

Bob K5TEC

That's the key. I think you asked me back at the beginning, you know, what's the key? I don't have all the answers, but I have found over the years that just trying to talk ham radio gets people this vision of old vacuum tubes and their grandfather sitting at the radio in the basement. The stigma of amateur radio. Just the words sometimes turn people off. And we have to be careful that if we're going to keep ham radio alive, we can't be just going after more people for ham radio. We need to get more people involved in everything else that's wireless. And ham radio seems to just become a natural for them at that point. And it's their decision. Oh, tell me more about ham radio instead of me trying to drag them into it.

**55:52**

Eric 4Z1UG

And now this mid show break. Every two weeks I listen to the ham radio workbench podcast with George KJ, six, Vu, Vince ve six, LK, Mark n six mts, Thomas K4SWL, Michael VA3MW and Rod VA3ON, and their guests on often topical and important projects in amateur radio. This discussion amongst the regulars and their guests remind me of the conversations that I used to listen to on 146.94 and 146.46 MHz in Orange County, California while working on my own workbench almost 50 years ago. It is amazing how much practical ham radio knowledge that we can absorb by listening to the Workbench podcast. That starts to make sense when we start our own deep dive into our own projects. So join me by listening to the Ham radio Workbench podcast now.

**56:47**

Eric 4Z1UG

And as George and crew push beyond 200 episodes, you can get to the Ham radio Workbench podcast by clicking on the banner in this week's show notes page. And now back to our QSO.

**57:01**

Eric 4Z1UG

Now, I noticed on your website that you also work with scouting for merit badges. It seems to me that in your facility you probably could accommodate a large number of the different merit badges. What's your relationship with the local scout council? And did they know that you're this resource for advancing their scouts through the merit badge program?

**57:23**

Bob K5TEC

Well, the Girl Scouts of eastern Mass. GsaMa definitely knows us and likes what we do and used to ask us to populate their website with classes, but after Covid, it sort of change direction and we are. We do our own courses. We don't have to go get approval and post it on their site, but we advertise on their site. We pay to be there, and that brings people to us. So local groups. There are some local groups that know us, and we'll come back year after year for things. But it seems like there are a lot of scouts out there. There's more than I thought because every year we have a new group that's discovering us and coming in.

**58:04**

Bob K5TEC

And it got to a point where I think this year were doing at least one or two scout groups a

month, and sometimes as many as two a week, they come in for a two hour block. They choose what they want to learn. We go through the curriculum and see what they need to get a badge, and we won't do book work and stuff they can do at their own council. We're going to do the hands on building or high end stuff that you can't do. If you want a space science investigator badge as a Girl Scout, you got to look through a telescope, you got to talk to an astronomer, and you got to learn about all this stuff. We do that. We have a planetarium. We have one room that has nine foot ceiling, and it's got a big planetarium in it.

**58:50**

Bob K5TEC

And we do live star shows and multimedia shows that can help supplement. We have another room where we can have a styrofoam balls, do the phases of the moon. We have a huge hallway where we can do the stretch out the scale of the solar system. And so that's the kind of stuff that we can provide that. That a scout leader who's usually just a parent with a maybe not a really great science background just can't do. And so they come here to get that part. The Boy scouts is a little harder because they are. They're a thicker book, so to speak. They have so many things you're supposed to do, and it's supposed. You're not supposed to be able to walk in and just do science and walk out with a merit badge.

**59:34**

Bob K5TEC

You're supposed to work on it for weeks and draw pictures of the phases of the moon over two months and things like that. So we get fewer Boy scout troops because they generally have their own way of doing things. But when it comes time to look through telescopes or make a pinewood derby car, they come here because we have the wood shop, we have the telescopes, we have the planetarium. What I'm working on now is to try to get the Boy scouts to realize that you've got a three way overlap between the electronics badge, the radio badge, and right in the middle, overlapping both of them, is amateur radio technician class, license and we've done this.

**01:00:19**

Bob K5TEC

We did this once with a group from Lexington, where we had them come in for two different sessions, two weeks, and we taught them all the things that are in the overlap zone and hands on. You know, they built the soldering irons, and they got a combination of things, so weren't teaching to any one thing. And when they left, we kept reminding them, whatever your interest, do you want to go for the radio badge? We got you partway there. Go for it. You want that electronics badge? We got you partway there. Go for it. Go for both. But also, we got you partway into amateur radio because you have to talk radio with both of those and electronics, and we're trying to get them to see that pathway. Sometimes they do it, sometimes they don't.

**01:01:03**

Bob K5TEC

We had a few that did latched onto it, but it's going to be a process. So you can't just take any kid and suddenly turn them on to some science. They have to want it. And some people aren't ready yet. Someday, maybe they'll come back to it.

**01:01:18**

Eric 4Z1UG

Yeah, you're episode 507, Bob in episode 503, I interviewed Todd McKinney, KN4TPG, and he got into amateur radio as a teenager because he discovered weather balloons on YouTube, and that suddenly became a passion as he learned more and more about it. He decided he actually needed a way to extend the range of his projects. And so amateur radio seemed to be the glue that made that happen. So he wasn't pursuing amateur radio. He was pursuing something else. And it sounds to me like this is your approach here. You've got an opportunity to work with kids at whatever place they want to be, and then ham radio can come in and be that thing that solves the problem, whether it's robotics, for example.

**01:02:05**

Bob K5TEC

Yeah.

**01:02:06**

Eric 4Z1UG

Does your r have a ham radio in it?

**01:02:09**

Bob K5TEC

Not necessarily, but it's. It's one of those. The Sci-Fi part of it is there, too. A lot of these kids, they like Sci-Fi. It's like us trekkies. We were into science and the science fiction. But what you just said with the high altitude ballooning, you. You almost, for a t, nailed it on that 13 year old I was explaining about earlier who'd launched eight balloons since he was ten, because he wasn't interested in ham radio. He was interested in tracking his balloons, and he had put gps pucks on them, and they get up too high and they freeze, or they get confused with altitude versus the surface of the earth. And so it wasn't doing the job and so he looked up, what is this thing called? Aprs?

**01:02:54**

Bob K5TEC

And he said, oh, I need to get a license in order to transmit my own APRS signal. So he looked for the nearest class to learn and it turned out that were giving classes all the time and there was one ready for him to jump into just in time to get his license for the next launch. And that's how Max got his ham radio technician license. But once he was there, he was hooked and he immediately went for his general license.

**01:03:23**

Eric 4Z1UG

Took my general class so he could use whisper.

**01:03:26**

Bob K5TEC

Well, actually we did a whisper project here where we built a circuit board for whisper and a lot of kids soldered their own whisper boards and carried on. But Max, this kid went even further. It became a little competition in the family because his mother and father also got technician just to be there for him. And he went ahead to general. And so his father went ahead to general. Then Max, I think before he was eleven, he took my amateur extra class as well and got his amateur extra, which I don't know if he really needs it, but he's a smart kid and he could do it.

**01:04:07**

Eric 4Z1UG

Is he pursuing anything else than amateur radio or is he just doing balloons at the moment? Do you see him discovering the thousand other tents in amateur radio?

**01:04:17**

Bob K5TEC

Well, he's the kind of kid that could go anywhere right now. He is happy doing high altitude balloon launching, but know can change, but he's got a, quite a following. We've got a balloon club that we're sponsoring within us. So, you know, just as we sponsor the Ham radio club and the Rocketry club, we also have the high altitude balloon club. They were, they were not doing well when they were off by themselves. Not in this metro area. We're in a metro area, there's more people around. So they asked, they approached me and said, could we move to your location and run classes and be part of New England Scitec? And I said, well, absolutely, I'd love to have you. And so there's no official documents and no money changing hands.

**01:05:00**

Bob K5TEC

They just come here, we post them on our website and we do high altitude ballooning here and it's another vehicle to get kids interested. So how many kids have gotten their ham radio license because of high altitude balloons here? That's the next question. I'd say probably half the kid, a little more than half the kids doing ballooning probably have their license by now or are saying, hey, I'm going to get it. I just, I'm too busy right now, but I will. So it's another example that some other stem science is what the kids are interested in, and they all interconnect. Everything's related. The atmosphere has, we connect to radio because you got to track your balloon. And so they see a natural reason to get a ham radio license, not because somebody tried to talk them into it.

**01:05:54**

Bob K5TEC

So I don't want to approach a kid and say, hey, ham radio is just for you. No, you want to say, what do you like to do? Oh, you like to do robotics. Hey, have you figured out how to do wireless communications with your robot? And they turn to AM radio and say, well, maybe I should do this, too.

**01:06:13**

Eric 4Z1UG

Do kids bring kids?

**01:06:15**

Bob K5TEC

Yes, absolutely. They have more fun when they're doing things together. And particularly, I hate to stereotype anyone, there are so many different types of people, and I'm one of them. We're all on the spectrum somewhere. There are people who are very smart kids who don't relate well with other kids or even adults, and they're. Yeah, they've got their blinders on, and they really are in their own little world. You get them here and they see other kids just like them, other kids doing stuff that they like to do. And they have to communicate to get to

know you and figure out what the other kids doing. And so they have to learn to communicate verbally as well.

**01:07:02**

Bob K5TEC

And so for a lot of kids, I do think this is one of the most rewarding things, is to see kids that kind of emerge from their shell and they start to become better communicators, better at being confident in what they're doing. No more just hiding in their little world. Their world opens up and they find that there are other kids who can be part of that world. And so there are kids making friends here that might not have done so if they had been sitting at home doing only homeschool and not interacting with other kids like them.

**01:07:36**

Eric 4Z1UG

So, Bob, are you in your element there? Looks to me like you are.

**01:07:40**

Bob K5TEC

Yeah, I'd say so. I, you know, people used to say, what do you want to do when you retire? And I say, well, I don't know. I'm not sure I want to retire because I was happy teaching, and I thought I would be teaching forever. And what happened with that school, it was heartbreaking because I, it wasn't my choice to leave. I was pushed out. They just didn't want my programs in science anymore. But the silver lining was that when I left and took all my stuff with me, this place blossomed. And I don't think I could have planned it that way. I don't think I could have said to the school, hey, I think next year I'm going to take all my stuff and go do something else. I'll figure it out someday. I mean, it's.

**01:08:19**

Bob K5TEC

Sometimes opportunities come at you, and you don't know that it's there. When it first hits you think it's, you know, you get depressed. You say, oh, this is. This was my life. I spent years at this school, 38 years teaching at that school. But in a way, for my final years of teaching, having a place where I can call the shots and we work with teammates, we're all working in it together in one direction and not having administrations pulling you around, I think this is a happier place. It's a more fun place for an adult to be as well as the kids. It's for us who are teaching. It's rewarding because we're not tied to the exams. We're not teaching in a rote class. You got to learn this. You get a grade tomorrow. It's ungraded.

**01:09:16**

Bob K5TEC

You go where you want to go, you do what you want to do. And for the kids who are in school doing what they have to do, they can come here on weekends and do whatever they want to do.

**01:09:31**

Eric 4Z1UG

Is there some kind of academic credit that they could get?

**01:09:34**

Bob K5TEC

No.

**01:09:35**

Eric 4Z1UG

Do you have some kind of a badge or something like that?

**01:09:39**

Bob K5TEC

I mean, yeah, merit badges for scouts. But the scout leader has to verify that I'm not a scout. What are they? They're very verified scouts. People are authorized to give out merit badges. I have our own little patch that I can give to scouts and for those who love collecting patches, and we do. I teach. I'm also a classics teacher. I teach classics. Well, mostly what I do now is prep kids for the national Latin exam. And there's an example of something that you don't find very well, very far up. My school used to do it, so that's why I taught Latin for 38 years. But around here, if you're a home schooler and you want to get an achievement award like that's something cool, because I'm trying to get these kids to score high.

**01:10:31**

Bob K5TEC

I mean, last year, all but one of my kids got either a gold medal, silver medal, or a perfect score on the national Latin exam. We're going to add the national mythology exam this year. This is another area that it's a vehicle to get kids here and interested in meeting other kids that have, like, minds, and these aren't the kind I think I see people saying, oh, well, how do you mix? That's different, right? Classics is not science. Well, yes, it is, because we're learning about how we got our science from all the people that came before us and all these different cultures and civilizations, and it makes for a much more rounded education. And guess who scored a perfect score for two years in a row? It's my kid, Max, science guy that launches balloons. So don't think that they're the science geeks.

**01:11:25**

Bob K5TEC

And then there's the classicists. They're all the same people. They mix. And most of the kids that are in my latin classes also go here doing stratoscience and arduinos and ham radio.

**01:11:40**

Eric 4Z1UG

Do you think your science center could be duplicated in other communities? I mean, it seems to me that you've got the right formula for hitting a lot of home runs using baseball terminology. One of the things I see, I don't see that kids are as passionate anymore about things in their teenage years, and maybe it's because they're overwhelmed with information, maybe it's social media pressures, all the other stuff, but I don't see that they have the passion. It seems to me that what you've created is a laboratory for creating passion in kids that will last their entire lives. Is it duplicatable?

**01:12:17**

Bob K5TEC

I hope so. I'd hate to think that when I can no longer run this place that it's just going to have to close up and go away. My hope is that I get enough people passionate about it here to carry it on. I would like this place to survive past me. Obviously, a lot of it is just me because of



my passion and because of my collection that I brought with it, but it could be duplicated. There's some restaurants that have themes, and they have classic old stuff mounted on the walls, and you say, oh, that's pretty cool. I've never seen that before. But if you go to another restaurant in another state, they're just like it. They do the same thing. They go around and buy up all these antiques, and they put them in there.

**01:13:05**

Bob K5TEC

So can you populate a facility with cool stuff like this? Yes, you can. It would take a lot to do it. I think initially, like a lot of money, a lot of people who know stuff. You can't take somebody who only knows one thing and say, let's build this whole center. I have a fairly diverse background. I'm going to be adding archery soon. I also teach archery. I'm a level two instructor. And behind the building, we're going to set up a small archery range that's shielded and safe. And the building owner is okay with it. My insurance company is okay with it. And you go like, whoa, sports and science. Yes. There's a science to how that arrow actually makes it there. Target arch. Target sports is actually science. And we're doing, and it gets you outside.

**01:13:56**

Bob K5TEC

Get some fresh air, get some upper body exercise. So we're going to do that, too. Yeah. I think you could replicate anything, anywhere it takes. It's. I think it's more. Less about the facility and more about the people. If you could take any space and make it attractive to you. Meaning not the big, huge industrial tools, but smaller sized. I mean, a drill press, we don't need to go bigger than that. We don't have a milling machine. We do drill press and hand saws, and we teach the basics so kids learn how to make something with saws and screwdrivers and things. And I think that's where we're at, the basic tools. So we don't need to go too big. But having something like this geochron on the wall behind us, that's an eye catcher for kids, they're fascinated with that.

**01:14:48**

Bob K5TEC

Now, I will point out that, see all those earthquakes and the volcanoes and all those lines connecting, that's radio waves propagating around the world with buoys in the ocean and heat sensors on the volcano, and vibration, seismic sensors, and they're fascinated with that. Oh, you mean. Yeah, wireless technology everywhere. Yeah, it's all around us. And they look around and they see the astronaut talking on the radio on this poster back here. We did that ariss, the amateur radio, ISS communications, 13 of our homeschoolers on a stage at the biggie in western mass, talking to an astronaut as the space station flew over. I mean, that kind of stuff, that's what kids want to do. They're not on it to talk on the repeater at 07:00 every evening. I mean, that's what the old timers do. We are trying to get the kids excited.

**01:15:47**

Bob K5TEC

If you have programs like that, if you have programs like balloon launching, programs like cubes in space, anyone can join cubes in space. It's a national organization run. It's trademarked. We, you can be part of their program. Cubes in space. I'm sorry? Yeah, cubes in space. Yeah. It's not cubes. SAP. Everybody confuses it. Are you going to launch something into orbit? No, we go up and back and you get your project back and you get to analyze it let's see what else we have. A wood shop. It does help to have the manual arts when we're

doing battling bots. We call it battling bots because we don't want to get in trouble with the tv show battle bots. But our battling bots are little things the kids build on their own. So you need the people to teach that how.

**01:16:34**

Bob K5TEC

You got to have people who are passionate about robotics to come in and help the kids build their bots, because there's no directions, there's no one way to do things. There's no formula for it. Everything's a compromise. You want bigger wheels, you get less torque. You get smaller wheels, you get more torque, but you can't go very fast. But you're going to battle, and you got to defend, and your things are going to break, and you got to fix it. And that's what real engineering is about. It's problem solving. So when you get in the ring with your battlebot, the kids are going like, whoa, this is. They just love it. All right. Battle bus is our most popular thing right now, but we don't do wireless for that. It's all wired. But you could replicate that anywhere. I think that.

**01:17:21**

Bob K5TEC

I don't have a model. I've not written it all out. Hey, this is how you run this place. But it's a team effort. It takes lots of people with lots of different knowledge, and it takes a lot of money just to have a facility like this. I mean, we're up on top of a hill. This is essentially former office space that we've converted. So we have rooms for different things. But you could do it in a warehouse and just have partitions. And being on top of a hill is great for astronomy, where you can wheel a telescope out facing south. You got the ecliptic, you got the planets and the moon and the sun there. We have a solar telescope, as well. We got a traveling planetarium. We go to. We go to schools, and we do planetarium shows at the schools.

**01:18:09**

Bob K5TEC

Yeah, you could replicate it, but I think you nailed it on the head when you said the enthusiasm. You got to have people. Not that I'm. I guess I sound like I'm very enthusiastic, but there are lots of people just like me. Or even better, more enthusiastic. And you get those people together, you create a plan. You get a piece of property, you replicate it. I would love to see this place survive. I'd love to see places like this pop up everywhere, if we could. And I know there's lots of places. There's coding places. Yeah, but let's do everything. Let's have the wide variety, right.

**01:18:51**

Eric 4Z1UG

So you can move from one room to the other. You could take your Arduino board and move it over to the robotics.

**01:18:56**

Bob K5TEC

Exactly. Why would you learn how to program an Arduino if you didn't have a purpose for it? So, our Arduino class is actually geared towards creating a robot that's going to play laser tag with other robots. So when the class is over, they all go into a ring, and they're going to be shooting lasers at each other and getting points. And they are. This is a beginner level

Arduino class. I look at coding, and some people are learning coding just in case they ever need to take it in college. That's not a good reason to take coding.

**01:19:30**

Eric 4Z1UG

Right. It's also boring. I think it doesn't have an end in mind. It's hard to ask the last question because it seems to me weren't talking about amateur radio as much, except that how amateur radio can certainly supplement stem. If you were going to give advice to an amateur radio club in a community, it's open to rebuilding itself in some way. What advice would you give?

**01:19:57**

Bob K5TEC

I have a whole PowerPoint on this, and I have given talks to some of the local clubs, and they just don't get it. And it's hard teaching old dogs new tricks. I know. It's. I have a hard time learning new things, too, because I'm up there. But the key, I think, is really, you got to think like a kid. A lot of what I do here, the way I plan things, the way I teach my lessons, the way I develop the curriculum, is I think about when I was a kid, I remember that. And I think a lot of old timers forget, you got to get a bunch of people together who remember what. What it was like to be a kid. And I don't mean the old timers think back and say, well, I used to think vacuum tubes are really cool.

**01:20:43**

Bob K5TEC

I think we should bring those back. No, I mean, you have to be tuned in with what makes kids think, what are they interested in? And I think human nature is not changing. We don't evolve that fast. We just have more toys to play with these days than we did back then. And you have to say kids are curious. They become especially curious about the world around them. About halfway through third grade to fourth grade, their minds are starting to open up to abstracts. They start to understand that they are a small part of a bigger picture and that space is bigger planets. Are far away. It takes time for light to travel. They start learning that there's a universe around them, and they're curious to know more.

**01:21:37**

Bob K5TEC

And you capture that interest in fourth grade, fifth grade, and even in 6th grade, because if you don't capture that interest then and get them hooked on science for life by 7th and 8th grade, they're starting to get worried about what the other kid will think of them if they do science. Peer pressure is kicking in by 9th and 10th grade. It's all about what your friends think. Unless you're fearless and are okay to be labeled a geek or motorhead or whatever, the football a jot, you have to have the confidence by then. And if we build that confidence early on and you build the interest in science early on, it doesn't matter. They can go off and play sports. I have a brilliant kid who does lots of science, who plays soccer. What's. Why not? I mean, I did.

**01:22:28**

Bob K5TEC

I played ice hockey, but I was still in science. I played football. I'm still in science. You know, you can be both. And I think the worry is that peer pressure often puts his kids into niches, and they're afraid to break out of that niche and break out of their shell because

they're afraid of what other kids will think about them. And you got to capture their interest before that kicks in. So I don't know if that answered the question.

**01:22:53**

Eric 4Z1UG

Well, you know what? It was a fine answer. Bob, what a pleasure this was. I knew when I was researching this episode that I would come up with a lot of gold on the one hand. And also probably I'm envious that you have this amazing facility to teach kids in. I myself have a student or two that, frankly, just does projects with me. So if I feel like I want to convert an engine from gasoline to natural gas because the natural gas is there and the gasoline is not, he just does it with me and he finds it's fascinating. So I'm envious of you. I'm so excited that you were a guest on the QSO Today podcast.

**01:23:33**

Eric 4Z1UG

I see exactly how amateur radio fits in, and I know that my listeners also will find this to be as interesting and informative that I found it to be. So with that, I want to thank you so much. I hope that at some point I'll get to your neighborhood and actually get to see your place. I just wish you nothing but the best.

**01:23:56**

Bob K5TEC

Well, thank you for having me on the podcast, and I appreciate the opportunity to try to talk about this kind of thing, and I think the key here was, yeah, we didn't talk about ham radio as much, but that's the point that people will find their way to ham radio when they're ready for it. They find their way to other cool stuff that is related to wireless technology. So I hope I'm sparking some interest in the podcasters. If you are a teacher or you have a way of influencing some schools or teachers or homeschoolers, find a way to reach out and say, hey, let's help ham radio by working our way through all the other related disciplines that can bring people to ham radio.

**01:24:46**

Bob K5TEC

Because think about it, if we don't get more new people into ham radio, the whole hobby is going to die off. So we have got to get new people in there of any age, but preferably the younger ones.

**01:24:58**

Eric 4Z1UG

Thank you 73 Bob thank you so much.

**01:25:03**

Eric 4Z1UG

That concludes this episode of QSO Today. I hope that you enjoyed this QSO with Bob. Please be sure to check out the show notes that include links and information about the topics that we discussed. Go to [www.qsotoday.com](http://www.qsotoday.com) and put in K5TEC in the search box at the top of the page.

**01:25:23**

Eric 4Z1UG

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**01:26:16**

Eric 4Z1UG

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My thanks to Ben Bresky, who as the consummate artist makes this host and his guests always sound brilliant. Ben also publishes a weekly jewish history podcast. There is a link to that on the QSO Today homepage.

Until next time, this is Eric 4Z1UG, 73

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