# Health and Human Science Matters Season 1, Episode 8: Chris Harper

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Avery Martin: Welcome to Health and Human Science Matters, a podcast by Colorado State University's College of Health and Human Sciences. I'm your co-host and digital media strategist, Avery Martin.

Matt Hickey: And I'm Matt Hickey, Associate Dean for Research and Graduate Studies. In our college, we make it our mission to optimize human health and wellbeing through discovery and innovation. But don't just take our word for it. Each episode, we sit down with people who fulfill that mission, our college faculty and staff. And today, we're lucky enough to have Chris Harper from Construction Management. Chris, welcome.

Chris Harper: Hey, how are you guys doing?

Matt Hickey: We're doing great. How about you?

Chris Harper: I'm doing well, doing well. Happy to be here.

Matt Hickey: Well, Chris, we talked a little bit and of course, you've seen our format. And we want to talk a little bit about you as a person and we'll talk about the scholarship piece.

Chris Harper: Sure.

Avery Martin: So, tell us a little bit about yourself, family, maybe particular interests you have, special memories from when you were a kid, et cetera.

Chris Harper: Absolutely. Yeah, I mean, I'm married. We just celebrated our 13th wedding anniversary last week.

Matt Hickey: Congratulations.

Chris Harper: Which was awesome. We actually were in Galveston Island, Texas this past weekend for our anniversary.

Matt Hickey: That's great.

Chris Harper: Kind of nice, a little quick getaway for us, but it was nice to get out there. We have two daughters, 12 and nine. Our oldest is in middle school and she's already acting like a freshman in high school. That's so much fun to deal with on a regular basis. I miss my dear little baby, but she's not that anymore. But she's on a swim team in town and she loves swimming. She's been swimming since she's about six and she's an amazing swimmer. Much better than I am, that's for sure. That's really cool to have that.

Matt Hickey: That's neat.

Chris Harper: She gets it from her mom. Her mom was a swimmer. I was not. I mean, I could tread water, but that's about the best I can do. Our youngest, she's on a competitive soccer team, so that just started this past year, which has been, she's really good. Of course, it now drags us all over the state.

Avery Martin: Frequent flyer miles up and down I25.

Chris Harper: Yes, yes, yes. So, we're traveling every weekend, swim meets and soccer tournaments that we seem to be hitting up. It's fun. It's great to see how my kids are doing and growing and really enjoy what they do and seeing how they can become their own persons. I mean, as a parent, it's like being a teacher, professor. You're trying to help them grow and move them along. Except in teaching, I have a lesson plan. As a parent, I'm just trying to make it work from day to day.

Matt Hickey: Oh, so true, so true.

Chris Harper: So, other things I guess I could tell you a little bit about, I'm not originally from Colorado. I was born in Chicago. I moved here when I was 13 to Colorado. My dad worked for AT&T for almost 40 years, which I know that's nonexistent these days. People don't stay at companies like that anymore.

Matt Hickey: Sure.

Chris Harper: But he got transferred from Chicago to here in the mid '90s and the rest is history on that. I just fell in love with living in Colorado. I mean, some of my best memories are being in the outdoors in Colorado, camping, hiking, mountain biking, backpacking, skiing, snowboarding, all that kind of stuff.

Matt Hickey: We were just talking about that. Yeah. That's great.

Chris Harper: So, actually we've got a trip planned. We're going to go to do Eldora, stay up in Nederland for Thanksgiving.

Matt Hickey: Good, good.

Chris Harper: Get up there. Get a few days in of riding and skiing and hang out in the mountains for a few days. So, I was looking forward to that, a nice little break. So, yeah, I mean it's a wonderful place here in Colorado. And I thank my lucky stars every day that I honestly get to do the job I want to do in the place that I love. Pretty cool.

Matt Hickey: You don't take that for granted.

Chris Harper: Nope.

Matt Hickey: Do you have a favorite spot in the state?

Chris Harper: Probably Breckenridge. Breckenridge has always been something that's been pretty near and dear to my heart. At summertime, it's beautiful there. Plenty of outdoor stuff to do there. Obviously, the skiing and snowboarding, I probably know Breckenridge Mountain, the peaks like the back of my hand these days. I know where to go and how, that kind of stuff.

 So, my parents, we had a timeshare there when we first moved up to Colorado in the mid '90s. So, that really was like, "Well, where are you going skiing?" "Oh, Breckenridge, obviously that's where we got the place." So, it just became a very natural place for us to go. And our kids absolutely love Breck too. We talked about because our plan to Eldora was, well, yeah, that sounds great. Cool. Why didn't we go to Breckenridge?

Matt Hickey: Passes on from generation to generation.

Chris Harper: So, I guess we're going to Breck the next time. So, it's like we're trying to change it up. So, Breck is probably one of my favorites, but I mean, there's so many great places to stay. My dad fell in love with the Black Canyon.

Matt Hickey: Sure, yeah.

Chris Harper: We first went there, again when we first moved here and when he passed away, his biggest thing is he wanted his ashes scattered there. So, that's very, very sacred place to our family. And we actually drove, went back there during COVID last summer, summer of '20. And I was surprised how emotional I really got being back there and just being back at the spot where we spread him. I was like, "Wow, that really hit me harder than I thought." But it's a very, very special place for us too.

Matt Hickey: It is a special part of the state down there.

Chris Harper: It is. That's awesome.

Matt Hickey: My favorite spot is not far from there. It's [inaudible 00:05:31], Mount Sneffels, Blue Lake space and this kind of stuff.

Chris Harper: Beautiful place. Unbelievably beautiful out there.

Matt Hickey: But then the state is so awesome that we could go on for an hour about our favorite spots.

Chris Harper: It's true. I mean, you haven't even gotten to the northern part of the states and steamboat and all that. I mean, those are all great too. And Crested Butte, it's amazing. I mean, I can go on and on, pretty much.

Matt Hickey: The Colorado Tourism Bureau can have a copy of this if they like.

Avery Martin: Yes.

Chris Harper: Yes. Yeah. But the weather's terrible here, don't move here. It's terrible. You don't want to live here. We have enough.

Avery Martin: Start backpedaling right away. That's so funny. And we're both transplants, right?

Chris Harper: Oh yeah. Well, that's it. I mean I say that, I'm like, don't move him, but I am too.

Avery Martin: You just appreciate the beauty.

Chris Harper: Exactly, exactly.

Matt Hickey: So, tell me about sort of your educational pathway, an open-ended question if there ever was one.

Chris Harper: That is a very interesting question to me because I did not follow a very traditional path. I did not go to college right out of high school. The one thing I always grew up to though was my dad was, I don't care what you do as long as you go to college. And that was kind of our generation, why. Everybody's got to go to college. You got to go to college.

 And I got out of high school and went, "I'm not going to college." And I didn't know what to do, honestly. I was working at a pizza place. I was managing and delivering pizzas and I was making pretty decent money for being 18. I'm like, that's fine. And of course, my pressure from my dad. And so, "What are you going to do? Are you going to school? Are you going to school? What are you going to do? What are you going to do?"

 And so, I started taking some classes at community college and I went to Metro State for a little while and finally, I had some friends that actually started working for a plumbing company in Parker, Colorado. And that's where I went to high school.

 And when they came to me one day and I was like, "Yeah, we're working on plumbing and stuff, making pretty decent money." I was like, "Yeah, I don't know if I really want to get into that kind of stuff. It's messy and dirty and this stuff." And they're like, "Well, it pays $16 an hour to start." I'm like, "Okay, so what? Monday morning, 7:00 AM? I'll be there." In the mid '90s, that's pretty darn good money right there for an hourly wage. And so, it just pulled me into the trades and I loved it because it was really about building and putting pipes and things in the walls.

 And I grew up building forts and go-karts and Legos and that's all the stuff all our friends would do. I mean, in summertime, we'd disappear all day and go build forts out in the middle of the forest outside of Chicago kind of thing and do that kind of stuff. So, this really hit me and really was like, "Wow, this is kind of cool."

 And I kind of worked my way up into that and worked as a plumber for almost five years before I decided to go get my undergrad, because I'd gotten to a point where I realized I don't know if I really wanted to do the actual install of work. I wanted to help manage that work. I was getting into more roles of leading crews and managing more of the work than actually doing it. And I really felt like, wow, this is really what I like to do now. And so, I realized at that point, maybe I found what I want to do. So, I went and I enrolled at CU Boulder. Sorry, I know, wrong school. I know, I know.

Avery Martin: [inaudible 00:08:40].

Chris Harper: I get it. That's fine. Enrolled there in their civil engineering program because they had a construction engineering and management program within the department there. And I was 23 when I started my undergrad. But I had enough credits from some of my other classes and stuff that it pretty much transferred in a year. And by 26, I had my undergrad.

 And my last semester at my undergrad of civil engineering, I had a professor, Professor Keith Molenaar approached me about, "Would you want to stay on and do a master's?" I said, "Well, I don't know. What's that really going to do for me?" And of course, mid 20s, I'm single at the time just going, "I'm just trying to make money. What's this going to do for me? Oh, it's going to help me make more money? Sure, why not?" So, I actually was working for a company at the time, fulltime, as I was doing my master's.

 And ended up working with Dr. Jim Diekmann, who's a professor emeritus now at CU for my master's degree. And did my master's, loved every moment of it, did some research on schedule optimization for projects. That was my master's thesis work. Finished that. I remember walking out of my last class that I was taking and going, "Huh, I'm never going to step foot in a classroom ever again. I am done with education. This is amazing." Yet this was mid-2000s now. And then the recession hit in 2008, which was really hard on the construction industry.

 The company I had been working for for almost five, six years really since my undergrad had laid me off. Laid off a bunch of us actually at the time in mid-2008. That company actually went out of business in 2010 unfortunately. It was really a casualty of the recession.

 And I was fortunate enough to actually get picked up by another company not too long after being laid off. I honestly attribute that to my master's degree. I was more qualified for than I should be, but it was a position. And this was a time where I was newly married and we had our first child on the way. So, I'm like, "Well, I got to have a job. It doesn't matter what I'm doing at this point."

 And it lost kind of its luster. It wasn't the same as what I was doing before. I didn't have the same responsibilities. It was also a time in construction that it was very hard to get work. And so, you had people doing things that were getting to be in my mind against my morals in unethical practices that actually started to at articulate into our company where I had my boss asking us as bidders and project managers to do these kind of unethical things that really, really bothered me.

 I couldn't sleep at night. It was too conniving and too cutthroat. And at the time, I started communicating again with Dr. Diekmann, who now at this point, he was a professor emeritus. When I was still with him, he was a professor when I was doing my master's. But started talking to him and he is like, "Yeah, you should come back and talk with Dr. Molenaar again." I was like, "Sure, sure."

 So, sit down with him. He's like, "Do you really want to do a PhD?" I'm like, "Yeah, I don't know. What's it really involved. I'll do some research and some classes. Great. I can kind of do that stuff. I've always been good at school." And I thought, well, I'll do that and I'll go right back to industry when I'm done and, "Oh, you can consult. Oh great. That's where you get to make decisions and recommendations, but there's no risk. Sure, I'll take that."

 So, that was my whole plan. And I got into the program and literally, I started in the summer of 2011 and a month in, there was a senior instructor that ended up having to leave abruptly because he was working for a solar power company that got bought out by another solar power company that was going to make him the president or CEO of his company. So, he had to leave.

 So, at this point, the department was stuck. Didn't have somebody to teach their intro to construction class. And so, Keith Molenaar came to me and said, "Well, do you want to teach it?" And I went, "Okay." So, this is July of 2011. Classes start in six weeks. I don't think I slept for six weeks because I didn't know what I was getting into. I had never taught a class before. I was one that if you knew me 10, 15 years ago and said that I'd be up in front of people talking all the time, they'd go, "Yeah, right." Such an introverted person. And public speaking, I had to take a public speaking class in high school. It was god awful. I hated it, hated every moment of that.

 Yet, it took me that first day of class being in there probably 15 minutes before I realized, "You know what, I kind of like this." And it really started to grow more and more throughout the semester. And I was really getting great feedback from students that, "You're doing a great job." And I got great score. When we used to do the scoring of classes, kind of our surveys that we used to do in previous, I was getting really good marks on that, which made me feel, "Wow, this is amazing. I'm actually pretty good at this stuff."

 And so, I got another chance to do some assistance with the capstone class a couple times throughout my time doing that. But realize that nope, this is what I want to do. I want to teach. I want to be in research and I want to be teaching and I want to see what I can do to give back to industry.

 Because one of the biggest self-satisfactions of this job, honestly, is watching students grow and seeing how they mature and change and how they're going to become the leaders of our industry. And they're the ones that are going to be building these amazing projects that help our society and move us into the future. It's not going to be me. And that self-satisfaction is so much bigger than watching any of these buildings I help construct come out of the ground.

 I mean, that was great and I could drive around Denver and some of the other places I've worked and see them and that's wonderful. But when I get a phone call or a LinkedIn message from a previous student asking me questions about this or that, that is much more satisfying to me than any of those projects I ever built.

 So, it's a bit interesting journey that I've taken to where I'm at. But I was 35 and I realized what I finally wanted to do in life. So, for anybody that's out there, you think you got to figure it out when you're in high school or even in your 20s, you got time, you got time.

Matt Hickey: This is such great advice and the nine conversations, I suspect we'll see this unfold over the next several years. The perfectly linear pathways are exceedingly rare. This mythology that's built up around that as if we all sort of knew we wanted to be sitting here when we were five years old or something or 25 for them.

Chris Harper: Right. That was kind of it. When you're a kid you're like, "Well, you do elementary school, then you do middle school." Well, that time it was junior high. Now it's called middle school, but junior high and high school and college. I mean, that was the natural progression.

 And then when I broke that progression, it was just kind of like, "Oh god, what are you doing?" But look where I got. Could I have gotten here sooner? Probably not because I don't think I was mature enough to do what I wanted to do when I was 18. And so, realizing that stuff, it probably helped me. But was it later in light before I figured out? Sure. But it doesn't affect me in any way, shape or form. And I love everything I do every single day that I'm here.

Matt Hickey: And I think you make a really good case too, that your experiences inform how you approach teaching and mentoring right in a way that had it been the speeding bullet pathway, because those all would've been hypotheticals.

Chris Harper: That's exactly it. Exactly it. Yup.

Matt Hickey: That's neat to see. So, at some point, we managed to coax you to come up the road a little bit to CSU. So, tell us about that transition here.

Chris Harper: So, that's another journey as well. So, as I finished my PhD at CU, I actually was hired at LSU, Louisiana State University in Baton Rouge, in their Department of Construction Management. So, I started there in 2014. That was my first teaching job, first assistant professor job, and first time living in the south. So, it was definitely a change for us.

Matt Hickey: I bet it was.

Chris Harper: A big adjustment to Baton Rouge and New Orleans area. But my job there was wonderful. I had an amazing boss that was from day one was more of a mentor than a manager, was from day one going, "Okay, my job here is to make sure you get to tenure. And so, what do I need to do to help you get to that?" It was always more of a mentor to that. Had great colleagues to work with. We ended up, they built a brand new engineering building, which CM was in the engineering school there.

 So, we had brand new office buildings and spaces to work in. And it was great. And we had a wonderful house. It was cheaper to live there than Colorado except that was the one problem. It wasn't Colorado. And being somebody that's a hiker and a biker and a camper, it's hard to camp in the summer when it's 9000% humidity outside and telling us to go, "Oh, there's these state parks you can go." And there are beautiful state parks, but when the elevation gain is 20 feet, I'm like, "This is just not doing it for me."

 And a lot of people are boaters and fishers and we're not really into that kind of stuff, our family. And so, it wasn't just wasn't as conducive to what we wanted to have. And we really wanted to get back closer to family. My mom lives here in the Denver area. I have two brothers and a sister that live in the Denver Metro area as well. And a lot of our friends still live in the Boulder area. My wife went to CU. I went to CU as well.

 So, it was just it was always a process that when we were at LSU, that was not going to be my full-time permanent job. It was something that my wife and I kind of looked at was like, "Well, we'll be here for six years. You can get tenure. Make sure you get your tenured and then we'll see what comes along." Well, for three years in, a job opening opened here at CSU and she said, "Well, you might as well at least try applying for it." Okay. So, I applied for it and got interviewed and I did not hide any of my wants to be back in Colorado in the interview. I said, yeah.

 And I had been pretty successful at LSU. I had brought in plenty of research money. I'd had federal money already at this point. I'd written numerous papers. So, I'd been pretty successful already on the research side. I was doing great with teaching. I was helping develop graduate classes at LSU. So, I was sitting in a really great position and headed towards tenure at LSU.

 And being three years in, and four years in when I actually left LSU, was kind of a risk because of the fact that I'm four years in. I was only a year or two years out from tenure there. And now, I'm taking the risk of hopefully allowing them to carry some of that over. But then, I still have to reprove myself in a much shorter amount of time now.

 And so, what I interviewed with it, they knew all my accolades. But I told them, I was like, one of the biggest reasons is this is a very much a personal move that the family and I, we think we would thrive better being back in Colorado and made that perfectly clear. And they still hired me.

 So, I guess my accolades and my success at LSU really did pay off for that. But it really was kind of nerve-wracking that first year because I really wasn't bringing any research money. I only had one grad student at the time. I was still trying to get my bearings and how the department functions because every department functions differently. As much as I went from CM to CM, it was different ins and outs, different administration, different strategic processes of what you want to do within the department, different focus of things.

 So, that stuff and really not getting much research really kind of freaked me out the first year being here. And then I actually started to pick up some work. I got a small little grant here actually to work on some open access information for teaching. So, I converted one of my classes all open access now using creative comments and some of those sites and things. So, all the material I use in that is completely open access. There's no textbook anymore. There's an optional one. They can get it if they want to, but I've built it now enough to do that. And that just kind of led to some more work.

 And finally ended up getting a project in January of 2020 right before COVID. Yay. A $450,000 grant, federal grant on development for construction inspectors workforce. And that really, once that hit, I went, "Okay, I think I'm good now, and this whole tenure thing." And able to get some more papers out and submitted for tenure in the summer of 2020. And went through that really well and got my tenure. And now, I'm sitting here as an associate tenured professor at CSU, which I'm unbelievably grateful for. Sometimes can't believe it.

 And unlike where I was at LSU going, I don't see myself being here. I see myself being here at CSU as long as I possibly can be. We love Fort Collins. This place is amazing for raising a family. It's so family friendly. There's so much to do. I mean, we were at Horsetooth probably the entire pandemic because well, we're outdoors, socially distanced, let's get our paddle boards, we just go up to Horsetooth.

 So, we spent a lot of that time and just, we love this place, love the town. Kids are doing great in school. They're doing great in their sports. My wife, she's a master's student here in School of Ed. She's getting her degree in counseling. So, master's degree. So, she'll be done next summer with that. But she teaches at Webber Middle School. She's an English teacher here. So, very academic based, very education-based family. But we do very well here and we're very happy to be here.

Matt Hickey: So, tell us about what you got going on. And we use the term lab loosely here, your sort of scholarship. What are you most excited about?

Chris Harper: My lab. I love the term lab, because I don't use the lab and I don't do experiments. And that's always the thing that comes to mind when people, "Oh, you do research. Well, what are you doing? Well, you're in construction, you must be messing around with concrete and dirt and stuff." I'm like, "Nope, never done that. Never once have I done anything like that."

 My lab is construction sites, construction companies, construction projects, that type of stuff. That's my lab. My lab is all about looking at, I should stop saying that, my research at this point is all about looking at how to improve processes between design, construction, operations and maintenance of construction projects. That's my ultimate overview of what I do.

 And a lot of this stuff touches on, as I mentioned, workforce. Trying to help develop a new generation of construction inspectors. Because right now, we have an aging construction inspector workforce. Heck, we have an aging workforce across the board, but some of these areas are much more extreme than others. And inspectors seem to be that way. We're not getting people that want to go into that role.

Matt Hickey: That's interesting.

Chris Harper: Very interesting that they ... And part of it I think even in construction management, I don't know how much we do our due diligence of teaching about inspection roles too. So, it's just kind of one of those off to the side type of things that people kind of fall into.

 And so, that's becoming a problem because we're having people retire, taking that knowledge with them. They don't have any way to pass that on. So, you're losing your knowledge management and your legacy of how things are done. You're also looking at the fact that in the last 10 years, construction has implemented more technologies than ever before. And to do these technologies to construct things, you actually have to have the technologies to inspect them as well. And it's not as easy to just going, "Here you go, here's the device to inspect it." They have to know how to use that thing now.

 And you're talking about folks that in the past have been using rods and tapes and that kind of stuff. And now you're giving these technologies. Well, it's a lot to overcome. And it's also, you're talking about different generational differences. A lot of the more seasoned experienced ones. They may not be as technically inclined as some, but you also have the problem on the other end.

 These folks that, oh, well, generations are coming out now. They've always lived in a world of the internet and they know technologies. Well, do they? Because there's been times that I've talked to folks where it's like, "Oh, we just give them all iPads and they still can't do it right, because they just think they know what they're doing, but they really don't."

 So, you just don't have the right training in place for some of these things too. So, there's a major issue there. And the fact that we see things like road construction projects that seem to take forever and take longer than you expect. And oh, all areas complain about, oh, why is it ... A lot of it has to do right now, they don't have enough inspectors to inspect the work.

 So, they're either doing risk-based inspections where they're saying, "Yeah, inspect this, but not this taking that risk." Or they're waiting to inspectors. And if they're waiting, that takes time. And if you're wrong in your risk-based inspections, now you're going to have quality issues. Now you're going to have maintenance issues when you go along once this project is in operation.

 So, there's a lot of different issues here, especially on that workforce side that we're trying to address with this one project that I'm working on with. It's through the National Academies of Science. So, it's a pretty big deal of trying to develop some more guidance around developing construction inspectors.

Matt Hickey: That's really neat.

Chris Harper: So, that's a big aspect. And then touching on back into the technology side, a lot of things of looking at not how technologies work, but how to implement them into specific aspects of construction. What could we use a drone for? We could fly a site, fly a site at the beginning of the week. End of the week, compare to progress. That's a lot easier to do than you're walking on the ground.

 So, there's things like that. You're using LIDAR and laser scanning to map out sites now that I've talked to, again, more stuff on transportation side, but Utah. Utah DOT has pointed out that they used to take them weeks if not months to go survey out roads in some of their more desolate areas, which I'm sure it's similar here. I mean, if you go up in the northwest corner of Colorado, there's nothing there. So, it's going to take forever to map those things out with people and boots on the ground. They can go now out there with handful folks, fly it with a couple drones in a couple days, process it in a couple days, they're done in a week now.

Matt Hickey: That's something.

Chris Harper: Amazing. But it's all about figuring out where to put these things though too, because everybody's got, "Oh, boom bang, this is awesome. Look at this cool technology. Look at this. This is awesome." And you're like, "Yeah, I need to buy that." And then you get it, you're like, "Well, what do I do with it?"

 And that's part of it too, is just trying to make sure before you jump into something like that, what are you going to get back from that, from that technology? What is your return on investment here? What is the cost benefit analysis around should we buy a set of drones or not? Should we be investing in intelligent and compaction machines and things like that? Should we invest on smart equipment that's talking? Does it all make sense? And that's part of it too, is not just to say, "Hey, we've got to be using this technology." We have to find the right place to do it and the most cost-effective way to do it.

Matt Hickey: Well said.

Chris Harper: So, it makes a big difference on that side of things too. So, a lot of that. And then also just the contracting aspect. Looking at creating the right teams for projects. How do you find the right people to be on a project? Who's the right constructor? Who's the right subcontractors? Who's the designer that's going to work well with them? How does this all mesh with the owner?

 And it's one of those questions still, I think, it's still somewhat elusive on what's the right team. Because every construction project is different from the next. We're not building, and I use this analogy in class all the time, we're not building F-150s. F-150 comes down the line, you're throwing the same bumper on that thing. Oh, you're changing out for a different trim model, okay, whatever. Same thing coming down the line.

 Every Walmart we build, yeah, they look the same inside, but every time they're constructed, it's different. You got different site conditions. You've got different players because you're in a different region. So, you've got different parties that are involved with it. You're going to have different design codes and things you got to hear too, because they change from municipality to city to city. So, all those things vary that makes it very difficult to know who do I have on this team that's going to make this work.

Avery Martin: And it's never the same thing twice.

Chris Harper: And it's never the same thing twice, because I've even worked ... And part of this stuff from the contracting even comes from my experience working in industry because sometimes, I get projects that on paper and a team going, "Man, this is going to rock, this is going to be great." And then you hit the ground and you're like, "Oh my god, this is a disaster."

 And another project, next one come along and be like, "Ugh, this is not going to go well. This design is not great. I don't know if I got a great team here. I'm taking on a lot of ... " And it goes great. And it's just sitting there going, "Well, why in the world if it's supposed to go this way ... " And it really comes down to the fact that you can really take a lot of our process and procedures that we use and design and planning and constructing.

 You can throw that all out the window if you don't have the right people on project. And it really makes a huge difference. Because when you have the right people, there's trust. There's collaboration. You're working together. You're never looking at the contract, ever. And that is a successful project. Because if that happens, you have a very good chance that you're going to finish on time, on budget, the quality you want, the functionality you want. Owner is going to be happy. And we live in an industry of reputation. Owner is happy, hey, repeat work. That's huge.

Matt Hickey: This is such a key lesson, isn't it?

Avery Martin: Yes, it is.

Matt Hickey: Blueprints don't construct themselves, do they?

Chris Harper: No. I don't know if I get through to my students on this stuff a lot, but I talk a lot about this stuff in my classes, all my classes, regardless of what I'm teaching. Because it makes a huge difference.

Matt Hickey: It sure does.

Chris Harper: Makes a huge difference.

Matt Hickey: My goodness.

Chris Harper: If you don't have the right people, it makes it much more difficult to do things. But you also have to learn in those situations if you don't have the right people how to work through those things. And there's definitely projects I've worked on had great teams. There were other ones, not so much, but I still had to get through. It's not like I go, "This is a disaster. Hey, can I get put on another project?" No, I mean, no. "Can I transfer out of this class or to another district or something?" No, you have to figure out how to still manage that.

 So, that's part of what I'm trying to teach too, is some of that soft stuff of how do you deal with more difficult people? How do you deal with the complainer that's on your site that just, you know they're just going to complain about something is all that ladders in my way. I'm like, seriously? That's what you're complaining about? I mean, let me move it for you. I mean, jeez louise, but you're going to have these folks that you've got to deal with and you still have to handle them in a very professional and respectful manner.

 I am huge on professionalism in my classes. I actually have included professionalism on my syllabi that I'm not only here to train you on how to schedule a project or how mechanical systems work. I'm also here to train you on how you handle yourself in industry. How do you handle somebody when they come to you and say, "Hey, this schedule's not going to work for me. I'm not showing up tomorrow." How do you handle something when a mechanical supplier calls you and goes, "We screwed up your order. It's not going to be there next week." Now what do you do? I mean, that kind of stuff.

 And you can't sit there and just start screaming back to them. And you can't sit there and go, "Well, you screwed me over here. Thanks a lot. Do you think they're going to help you along the way then? Heck no. Oh, they're delayed a week now. It's delayed two weeks. Weird how that worked out."

 And a lot of this obviously comes from my industry experience. As much as I love my industry career, I absolutely love academics. But I would not be able to do what I can do as a teacher if I did not work industry for almost 15 years. I mean, if I did not have that, I don't know how I would be able to teach how I do. I really do.

Matt Hickey: Because what it's like out there can't be glean from a textbook, right?

Chris Harper: That's right.

Matt Hickey: You're going to go do it.

Chris Harper: It's a very much practical area, a practical industry that we can teach you and show you all the concepts and stuff like that. But unless you see it's an action, you really don't see how it all really works.

Matt Hickey: You know what's really interesting to me about this, we toss around this word interdisciplinary all the time and we tend to think about between different units in a college or across college borders or what have you. But here we're talking about within a single class in CM, in the extraordinarily wide-ranging disciplinary focus, you got sort of the human factors, the psychology piece, there's an economics component. I mean this is one class.

Chris Harper: Yup.

Matt Hickey: My goodness. Sometimes you don't have to go look behind your department borders to do interdisciplinary work. It's just inherent than what we do.

Chris Harper: It is, it is. And everything we do really flows from one class to the next too. And so, it really does give them all the flavors that are out there. But again, when you're taking estimating in one semester and scheduling the next semester, you're not necessarily seeing how they're connected and how they're worked on a day-to-day basis.

 And that's what they see when they do their internships. That's what they see when they get their first jobs out there of how that stuff actually comes together. And it's amazing how many students, and I tell my students at the end of every semester, I'm like, once a student, always a colleague. If you ever need anything, you're more than welcome to wake me up.

Matt Hickey: That's great.

Chris Harper: And I get students on LinkedIn texting, even calling me sometimes going, "Man, you were right about that stuff." I'm like, "No, I'm kidding. You just thought I was making it up when I was teaching it. I was just making that stuff up." It's like, "No, what you're talking about how these people act and do things." I'm like, "Right, that's how it works in industry. So, you see why I bring that stuff up in class." It's like, "Man, nobody else ever talked about that in class. I'm so glad you did." That kind of stuff. I'm like, "Well, I'm just giving you guys what I see in industry. I can sit there and tell you, 'Well, this is how you do a CPM schedule and this is the calculations and all that.'"

 But the end of the day, what does that mean when you're in the field? When you show somebody in the field, like here's what I need you to do. And they tell you, no, that's not going to work, or I don't have the resources to pull that off, what do you do. You need to know how to act to those things. And if I'm not teaching to that, then what good is it to know that a schedule, "Oh, we did an update on our schedule and we're behind by three days." "Okay, what do you do now?" "Oh, that's it. We're behind by three days."

 No, it's telling you now, okay, what do I got to do to get myself back on track? What's it going to cost me to get back on track? What other resources do I need to bring to speed up some of my project? You can't make those decisions and understand those unless you talk about that stuff in your classes. Because if they just sit there and go, "Oh, it's behind by three days." Just know that critical thinking aspect is not there that management aspect isn't there.

 And so, that's where that comes into play and it has to, at least in my mind of how I teach this stuff because they don't see that. We're training them to be construction managers, not constructors. There's that management piece that's there. And so, that has to come along with it.

Matt Hickey: And learning how to think on your feet only comes by practice.

Chris Harper: That's right, that's right. It's practice, practice, practice.

Matt Hickey: So important.

Chris Harper: I can definitely tell you I made plenty of mistakes in the first numerous years of my career, especially as a plumber. Being in my teens and early 20s, just doing stupid crap. The things you always hear about of contractors showing up, but they can't do the work so they leave. So, that would be us. We'd leave, all that kind of thing. And just looking back, I'm like, "Man, that was pretty immature." But you didn't know any better.

 And I'm just following the cues of my friends and colleagues I was working with too at the time. And I'm like, well, this is how we do it kind of thing. And of course, if I knew what I knew now back then, it would be a different thing. But that's always the adage, isn't it? The older we get, the better we understand things. But it's just like, yeah, but if I'd known what I was doing when I was 18 now, wow, what a different world it would've been. But I guess that's the path of life, isn't it? Just doing the progressions here through the motions.

Matt Hickey: We're going to nudge your gaze from 18 to five years down the road. I want you to think about Chris Harper's dad and husband and Fort Collins community member and scholar and teacher and mentor five years down the road.

Chris Harper: That's a great question. So, five years, that would put my daughter as a junior in high school. Oh man, that's scary. So, yeah, there's that aspect of it. Five years, I know five years, my wife will be in a much better place with her master's degree if she wants to get into more. She wants get into more career counseling, not like the actual psychological thing. More of the career counseling and helping students find their paths. She's even high school or even college level doing advising and that kind of stuff, that kind of thing.

 And so, I know I'm very excited for her. She's been one that she's gotten tired of the classroom as much as she, bless her heart, for dealing with those middle schoolers. There's only so much you can take, I think sometimes. And so, she's really looking forward to that. So, that's going to make a big difference in how we function and what we can do in the next several years. My youngest, she's just crazy and outgoing and nuts and she's going to do great. I don't worry about either of my kids in that aspect. They're great kids that way. And I think we do pretty good job parenting. I mean always, like I said, there's no script for that one.

Matt Hickey: Indeed.

Chris Harper: So, we do the best there. But then I guess for myself, boy, this is always the ones where it's like, oh, now I'm put on the spot and I really have to think of something that sounds good. No, I mean, five years from now, I still see myself here. I don't see myself going anywhere else. CSU is our home for my career. Fort Collins is our home for our lives. I do see myself trying to move forward with some more bigger research ideas, bigger factors. So, I've already talked about some of the construction inspector workforce stuff where I've already working with another colleague in the department, Dr John Elliot.

 I'm just trying to conceptualize a workforce center type of research aspect of trying to set up something that could be collaborative between University of Colorado, Denver University, University of Wyoming. CSU obviously would lead that effort of creating more of a construction workforce development type of center where we could bring in and develop the training around things that can be taught at even community college, even Red Rocks Community College. Why don't we have something that's more set up that's geared, that matches with us here.

 Of some people could take through their associates there and then transfer over, or at least give them a way to, if they get associates degree, maybe they get a certificate for inspections. That kind of stuff that we can start to involve more of those things. And being collaborative across the different schools provides more resources, provides a wider aspect of who we can reach.

 But there's a big issue, obviously, as I mentioned about construction inspectors, but we also have a major issue with not enough engineers. We have a major issue with not enough craft workers trying to find pipe fitters, plumbers, electricians, welders, very difficult these days. And when you can find them, you're paying that premium for them.

 And so, looking at trying to develop better programs around those aspects, because as much as I was in that generation of, "Hey, you got to go to college and I teach at a college," I don't necessarily think everybody should go to college. There are definitely plenty of roles out there that you don't need to go to college and you will do just fine in construction industry. You will do very successful. I'm sure there's actually welders that are out there that probably make hell of a lot more money than I do, and they probably never set foot in a classroom in a college classroom.

 There's nothing wrong with that. There's absolutely nothing wrong with that. You can still be successful at that stuff, but it's all about trying to get the right trainings in the right places.

 And also, encouragement. How do we draw people more towards this? A lot of folks don't necessarily see construction trades as a place to work anymore. A lot of times construction trades were handed off from generation to generation. Your dad took you to work with them. And right out of high school, you just started working with your dad again. We're losing some of that. So, we are losing more people seeing these trades as a clear career path.

 And so, trying to develop more around that, because there's a lot of talk about 2030, what's it going to look like in 2030? Well, think the work shortage is bad now. Wait another nine, 10 years, it's going to be a hell of a lot worse.

 So, it's looking at that. But also, not only the workforce development, but where does technology's place in this? Where does the technology go from not only making us more efficient, but actually start to supplement some of that workforce? And it's not to say, "Oh, we're going to take jobs away from people." No, we don't have people for those jobs, so we need something there.

 And so, it's all about looking at where we can do to help improve that. Because if we keep going down the path we're at, projects are going to cost a hell a lot more. They're going to take a hell a lot longer and it's just going to become more and more frustrating just not only for the people working on it, but for society.

Matt Hickey: But it's not inevitable.

Chris Harper: No, it's not. And as much as I sit here, it's not like I'm the only working on stuff like this.

Matt Hickey: Sure.

Chris Harper: There are plenty of colleagues that I know of that are working on similar stuff and probably plenty more that I don't know that are working on stuff like this. Because it is a major issue in construction right now. We don't have enough people to do the work that we need to do. And it's not like the work's going to slow down. I know. And it's not like the technologies are going to go away.

 We need to figure out how to get this workforce to grow, but also to embed more of these technologies that it becomes a much more technology-based industry that is using these things to help offset those shortages, but also to make ourselves more efficient.

Matt Hickey: And if the industry doesn't move quickly, it will become more and more inevitable.

Chris Harper: That's right.

Matt Hickey: The longer you wait to-

Chris Harper: That's right. That's a big part of it. So, I guess that's my biggest drive right now is looking at that of how I can continue to help improve the industry and striving towards something like at workforce center that hopefully in five years that does become something of more of reality than a concept that just a couple professors have been talking about.

Matt Hickey: That would be cool.

Chris Harper: Yeah. We look forward to it. Cool. Awesome. I'll come back in and talk then about it too.

Matt Hickey: We'll get you back.

Avery Martin: You definitely will. You definitely will.

Matt Hickey: I have two more questions and it's really related to sort the environment in which we find ourselves.

Chris Harper: Sure.

Matt Hickey: Fortunate enough to work. So, first one's about the college, and I'm just interested in your reflections on what you like the most about working in the College of Health and Human Sciences.

Chris Harper: The most is the diversity of the college. I mean, it is the biggest college on campus, and the programs are one from different to the next. I mean, I see things from occupational therapy going, wow, that's fascinating. I would've never thought that that's something you can research but that makes a hell of a lot of sense.

 People working with food nutrition are working with therapy, but also then working with how they improve families. And yet we're over here trying to figure out how to make construction better. And every one of these are all very labor human intensive departments. I mean, it takes people to do these things. We're not in engineering where it takes a lot more of engineering and softwares and technologies today. We really need the people to do what we do.

 And just seeing that diversity is amazing to me because there's so much that's going on that I just see so many different avenues of where people could collaborate, where people could branch out, even put themselves in a less comfortable position even. But at least see, hey, would this work? What could CM and occupational therapy do to together? What could family studies and CM do together? Because right now, there's another major issue in construction, and it's been there a long time, but it's finally getting press is the psychological side of things in construction.

 Construction has one of the highest suicide rates out of any industry. We also have one of the highest opiate and addiction type of problems as well in the industry. And that's been overlooked for decades. And it's finally getting pressed now that we're not taking care of our workers. We're not taking care of our people. And why couldn't there be something to branch off with family studies to look at something here? Is there something that.

 So, just looking at those different aspects of what could collaborate here really makes a big impression on me. I haven't gotten to that step. Now, I also blame it a little bit on the fact my first three years here was I just want to make sure I get my tenure. But now being at the associate level, I'm definitely exploring more of these aspects to say, "I think there's a lot more collaboration that could be going on in this college. "And the fact that that's able to happen, I love that aspect.

Matt Hickey: Sky's the limit as far as I'm concerned.

Chris Harper: For sure.

Matt Hickey: A lot of potential.

Chris Harper: That's incredible.

Matt Hickey: The next layer up is this institution, CSU, and we constantly and proudly remind ourselves that we're at Land Grant. So, what does that mean to Chris?

Chris Harper: Opportunities. You have your main campus here, which has got a lot going on all the time. You've got your mountain campus. You've got stuff going on up there. There's definitely some things that, even from our aspect of collaborating with them, and I believe there's somebody in our department that's been doing some stuff with them on doing some stuff from the wildfires of looking at how to recover in terms of construction and what planning needs to go into, how to recover from that stuff. So, even that aspect of things.

 And then also the CSU extension I think is an unbelievable great opportunity of the different aspects and the different areas across the whole state that really ties us into being a very Colorado centric school, which is amazing. Even more so than CU Boulder was.

Matt Hickey: Exactly.

Chris Harper: No, I mean, I am saying that to say that, but I am saying that to say that really, I do feel much more that CSU is tied closer to Colorado than other schools in the state. It has that feel for it, that it is the College of Colorado. And even in the extension program, I was working with Douglas County for a few months when I first started here of trying to help them, they have a dilapidated historical building at one of their sites at a park, which literally was 10 minutes from my house when we moved here.

 So, it was like, oh my god, I remember this place and all this stuff and they were trying to save the building without having it torn down. And so, I was helping them to kind of coordinate some of the historical aspects of it and helping them to get some folks in there to take a look at it. It's been slow going. I know they've done some renovation to it up to this point, three years later. But it is something that I still talk with them every six months or ago to see, "Hey, how's it going? How's that still moving forward?" And still trying to help with that aspect.

 So, some of the stuff that I do in having those opportunities, it do0esn't have to be involving research money and grants. It just has to, am I making a difference in helping something, then I'm going to do it. And those opportunities are here at CSU because of that Land Grant Mission, because of those aspects that are there.

Matt Hickey: So well said.

Avery Martin: Yes. Absolutely.

Chris Harper: I didn't even write that. That wasn't scripted. That was just-

Matt Hickey: Extemporaneous. It's the best way to do it.

Avery Martin: That's how it works. That's trainer. That's right, man. Be on your feet, man. Got to be on your feet. So, awesome. That's awesome.

Matt Hickey: Big fan, Chris. Thanks for coming. I really enjoyed it.

Chris Harper: Absolutely. This has been great to talk with you all. So, looking forward to the series coming out, and hopefully, we can do this again sometime.

Matt Hickey: Yes. We look forward to it.

Chris Harper: Awesome.

Matt Hickey: Thanks for your time.

Chris Harper: Thanks, Avery.

Avery Martin: Thanks. See you.

Matt Hickey: And that's our show. Thanks for tuning in to another episode of Health and Human Science Matters.

Avery Martin: If you want to learn more about our CSU College of Health and Human Sciences, visit our website, chhs.colostate.edu.