



The Think Inclusive Podcast

Season 10, Episode 13

Dr. Temple Grandin | Visual Thinking

Audio Transcript

Tim Villegas

Okay, I'm going to address this right from the start. The mention of Temple Grandin in some circles in the disability community can induce reactions from cringe to accolades. So let me tell you the reason why I wanted to have temple on the podcast. In her new book visual thinking Dr. Grandin recognizes that our public schools are missing the mark with offering a flexible curriculum for all learners, and that for visual thinkers like her hands on classes are unfortunately, absent for many school systems. I think that is a worthy message to amplify. My name is Tim Villegas from the Maryland Coalition for inclusive education. And you're listening to think inclusive, a show where with every conversation, we try to build bridges between families, educators, and disability rights advocates to create a shared understanding of inclusive education, and what inclusion looks like in the real world. You can learn more about who we are and what we do at MCIE.org. For this episode, I speak with Dr. Temple Grandin, professor of Animal Science at Colorado State University and the author of New York Times bestsellers, animals and translation. Animals make us human, the autistic brain and thinking in pictures, which became an HBO movie starring Claire Danes, temple and I discuss why she wanted to write visual thinking, what educational advocates can learn from how she helped improve the welfare of farm animals and what educators can do to support visual thinkers. Thank you so much for listening. And now my interview with Dr. Temple Grandin. Dr. Temple Grandin, welcome to the think inclusive podcast.

Temple Grandin

It's great to be here.

Tim Villegas

So is it okay, if I call you temple or is Dr. Grandin?

Temple Grandin

Call me Temple. That's absolutely fine. So we're going to be talking about my new book on visual thinking.

Tim Villegas

Yeah, fantastic. You've written a number of books. So the artistic rain thinking in pictures, which I read, I don't know how many years ago. And animals in translation, why did you want to write visual thinking?

Temple Grandin

What triggered that was two trips I did right before COVID. shut everything down. I went to two state of the art port processing plants, a one to poultry processing plant brand new one in the Steve Jobs theater. And I discovered there's a lot of things that we're not making. See, I mainly worked in the beef industry. And that equipment we actually still know how to make but that's getting close to retirement. But the pork plant and the chicken plant, the equipment's all coming in from Holland. And there's a link here with our educational system. We are now paying the price for taking out the shop classes. We are now paying the price in the food industry for shutting down in house engineering 25 years ago, we're paying for it now. I've been in this industry for 50 years. And then when I went to the Steve Jobs theater, I found out that the structural glass walls were designed in Italy, fabricated in Germany, and the carbon fiber roof came from Dubai. And I stood in the middle of that theater screaming, we don't make it anymore. And that was one of the things that triggered doing this book. And then of course the lockdown came. So I call up Betsy Lerner, my co author. And I said let's do the book. And we both had nothing else to do so did book. But the events that kind of motivated the theme of the book is a skill loss issue. Check out the people fixing escalators that people fixing elevators these days, your mechanic that comes on the plane to fix your plane. They're getting grayer and grayer and older and older. And they're not getting replaced. And it goes back to the educational system. And and then I just when I did the autistic brain, I discovered that there was object visualizer and a pattern thinker. And the kind of thinker like I am is the one that can't do algebra cannot do algebra. They're in what I call the clever engineering department. So I went back to all the projects I worked on, where I spent a lot of time out in the big plant. And it was kind of an interesting division of engineering. You had degreed engineer would do all the more mathematical things, boilers, refrigeration, roof, wind loads, snow load, power and water. But the guys in a shop with no degrees were built doing what I call clever engineering. Think mechanically clever packaging machine for example. And those are the people that are not getting replaced. The people that invent mechanically complicated equipment that you use in food processing, also in other industries

Tim Villegas

What What was it about why these certain products or materials machines are being made in Holland? Like, what about their educational system? Well,

Temple Grandin

what they do in Holland and in Europe, and I've looked it up, the kids are around 14, you can cycle University route, or technical vocational route. And they don't look at the vocational route as a lesser form of intelligence. I think completely in pictures can't do higher math, I have no abstract thinking. And, and so in figuring out how mechanical things work, that is easy. I also went back through all the projects I've worked on, I'm going to start writing down all the people I've worked with, I'm going to estimate 20% of the people that designed machinery, doing

drawings, and people who are inventing machinery with about 20 patents each with autistic dyslexic or ADHD. They were the kids were the shop teacher turned them around. And that's what this is what motivated me do this book.

Tim Villegas

In the book, you talk about object visualizers and spatial visual.

Temple Grandin

That's right, and a spatial visualizers think more in patterns. It's patterns instead of photorealistic pictures. See, everything I think about is a photo realistic picture. I was just out at a big corporation yesterday, works in travel. And we were trying to like help blind people and Deaf people to get to the airport. So I got to, then this blind person there so well, the worst thing I have at airports, I can't find the gates. So then I started thinking up a way I could do gate finder app for his phone, maybe put little transponders on the gates. So as he walks through the terminal, it will say a 60, a 62. And announced the gates as you walk by them. And I NS off the shelf technology that can probably do that with. That's real simple.

Tim Villegas

I would think that there are some airports that naturally do something like that, right? Or is that is that not common? Well,

Temple Grandin

we don't want to do something that doesn't cost a lot of money. You see, I think very simple. No, the programmer wants to put more and more stuff on it. But okay, now what the deaf person? Well, I figured out I'm gonna classify gates at the airport, as visible gates, and auditory gates. And, and I see it and I see the exact door at our Denver airport where four or five flights are coming out of one door, and you can't see any the aircraft. So you're totally dependent on hearing the announcement that those gates were a visible gate, I can see the people line up and there's one door one aircraft. And so if I was deaf, I'm not gonna miss those flights. Right? So okay, see how you see I just see it, and I see it at a specific airport. And I do a lot of travel all the time. And so I tend to just think of what's the simple way I could do it. And I could train the gate agents, to just, they can talk back and forth using a text function on the phone, and they don't have to send them. And you want to train the gate agent that they got a deaf person, and they have an auditory gate, that they need to tap that person on the shoulder to get them hooked up to the door. You see, that would be easy to do.

Tim Villegas

Are you familiar with the framework, I guess of universal design?

Temple Grandin

Yes. Um, where in other words, let's take subtitles going on, on programs? Will every bars using that now? Right, right. And it was originally designed for, you know, people that were hearing impaired.

Tim Villegas

There's this definite movement in education right now, to bring the concept of your universal design into designing curriculum. So, you know, you have you have a number of learners in the classroom, and they may or may not have all of these different, you know, learning styles or types of ways of learning and different

Temple Grandin

brains. Okay, in the state of California, I wouldn't able to graduate high school because I can't do the math requirements.

Tim Villegas

Right, right. Exactly. So

Temple Grandin

if you want and the people I worked with saw that had 20 patents each, they also were terrible at math, and higher. Yeah, thank you arithmetic.

Tim Villegas

Well, that is something I wanted to talk about. Because, you know, in the book, you talk a lot about that we're screening out kids, we're screening out

Temple Grandin

what I call the clever engineering department. They also super good at photography. I've talked a lot of news crews, a lot of you know, TV and movie photographers, a lot of them are dyslexic or ADHD. And they got exposed to cameras and and were able to get into that field and then also animals because animals don't live in a word based world, they live in a sensory based world. It's sensory based, it's not word based. And I think some of the discussion about animal consciousness and I just read an article yesterday, what our computer could be conscious. And in the New York Times, and they, some people think you'd have to think in words to be conscious, well done, I guess I'm not conscious then. Right? What I have found is a designer that I want to figure out, let's go back to the blind people in the deaf people at the airport. I've had a lot of success in getting the livestock industry to change. And one of the reasons why I was able to do it is I was able to fix a lot of stuff without buying tons and tons and tons of expensive equipment. Management repairs, nonslip, flooring, simple changes. It's one of the reasons why it was successful. And so I immediately start thinking, how can I do a simple things? Like just, I can go through the Denver Airport, I can say, okay, that's an auditory gate that is two doors, they're just horrible. I've almost missed flights there, you have to really, really pay attention. What are all the other gates, I can see the plane roll up. But even if I can't see the plane roll up, I can see the people line up at the board. So I tend to turn them turn out announcements. So I like to look at the door. And then when I see the people getting up and lining up, then I would know line up.

Tim Villegas

What you're saying is out this, what you're saying is if you make small, not necessarily small, but practical, simple changes to an environment to make things more accessible, whether that's for people or for animals.

Temple Grandin

Well, exactly. And, and things like wheelchair ramps like Onyx on a new construction. They don't cost hardly anything put in a new construction. Right, right. And then you use them for everything else, bring food deliveries and things like to see wheelchair ramp used for that.

Tim Villegas

Right. So the things that you've done or advocated for, for the for animal welfare, seems to have really changed the industry in a positive way. Well,

Temple Grandin

and it's it's very simple. The thing I've learned, I've trained a lot of people how to do audits of training, a lot of people in cattle handling, you have to have really simple clear guidance. There's a lot of stuff that gets very abstract, very vague. And let's say I'm going to train an auditor to audit animal welfare to make plan. I got a day and a half workshop to do that. And I developed a very simple scoring system, where they score electric prod use, they score stunning efficacy on things that are easy to measure. And you have to figure out what are the important things to measure. It's sort of like traffic on the highway. If I can only measure five things to enforce safety, it's going to be drunk driving, speeding, running red lights and stop signs, texting and seatbelts. Those are the critical control points for traffic. Those are the things you really need to enforce.

Tim Villegas

That's a good point, though. We talked about enforcement, right? So you can have all of these checklists, and you can do audits, and you can say, These things are wrong and that need to be fixed. But if there's no accountability to actually fix the problems, then they just stay the same. Well,

Temple Grandin

you're measuring outcomes. So one of the things we measure slipping and falling during handling, Metro electric prod blow us measure cattle vocalizing when you're handling because if they're vocalizing you're doing something nasty to him. poltroon electric prod slamming a door on him. Something bad's happening. And in these in you have to figure out what are the critical things to measure in food safety. We have a concept Hassam Hazard Analysis Critical Control Points, what are the critical outcome measures to measure? And I got day and a half workshop training an auditor. One of my students is an auditor right now. And then they have to have free shadow audits with an experienced auditor. And then you turn them loose. Yeah, so I've had lunch with my student that's now an auditor. All right now we got to do let me show you some really good scoring tools for laying hands on feather condition. We're looking them up. You need to use these websites. But you've got to have have on simple guidance that they can do. There's a tendency to get things way too complicated.

Tim Villegas

So a big concern of yours that you bring up in the book is learners who are on the autism spectrum that spend way too much time playing video games or being lost in whatever it is getting

Temple Grandin

good jobs is is probably you know 100 students for every slot, actual slot and video gaming. Straight, I'll tell you one way to get them off the video games, there's been some real successes with young adults introducing car mechanics, where they've actually gotten jobs and car mechanics. And they discover the engines are more interesting than video games. But we've got kids growing up today that have never used tool. They don't cook, they don't sell. I had a girl in my class who had never used a ruler to measure anything last year. They're not making stuff and doing stuff. Because the other thing is don't have to be introduced to different things to find out what they love, also find out what they hate. Right? How can you find out? What do you like working on cars if you never get introduced any of that stuff? So people ask me, what would I do if I could do something for the schools? Put all the hands on classes back in? Shaw?

Tim Villegas

Yeah, you say, Yeah, give me what you're

Temple Grandin

selling, aren't theater, music, all of these things? And some states are starting to do it. All right.

Tim Villegas

And yeah, and so yeah, like, I'm just thinking about the districts here in Georgia, where I live, that the they still have all of those. But you know that the interesting thing is, though, those classes are always accessible to people, you know, with more significant disabilities or people with you know, what,

Temple Grandin

what they think is autism, Scott's probably got with autism diagnosis, you're going from Einstein, who would definitely land an autism class today, because he didn't talk until he was three. It don't talk like gold and autism classes. What happened to him today, you go from Einstein, to somebody that cannot dress themselves. And it all has the same name.

Tim Villegas

And so, you know, when you're talking about the kind of support a learner might need, you know, one might need more support than the other like you said, you know, someone who is speaking in versus non speaking, or, you know, the life skills,

Temple Grandin

some of the ones that cannot speak, actually ascribe problems and sensory scrambling problems would not be able to control their movements, and they can type independently

without being touched. And there's some good books on that to like, Tee them up ahead of hey, how can I talk with my lips don't move.

Tim Villegas

Right, right. So I mean, how can we make sure that those classes those hands on classes, like you said, are also available to you know, people who have high support needs, like what you said, you know, who are are learning how to, you know, spell to communicate or type to communicate, I

Temple Grandin

can tell when you need to do something, because I've been on some elevators with doors that weren't working right, skipping floors, scraping in the shaft. I'm back to full travel now. And they have surfaced. And I noticed that stuff. Brand new escalator at one of the airports is already squeaking.

Tim Villegas

So in your view, the one of the one of the big ways to handle that is to bring all of these more technical type classes back into the schools.

Temple Grandin

Well, that's right, you see, and the other thing is, there's a tendency or similar once we go to university, I know a guy that took a welding class in high school, he was not autistic. Start a tiny little steel and concrete construction company now has a big construction company and corporate jet. You know, very, very successful. There's a tendency to, I think that there are a lot of verbal thinkers that don't even know the visual thinking, like my kind of thinking even exists. Because when I was doing a book signing for my book, visual thinking in October, I did one of the talks in school, not talked to the principal. And he didn't even know that my kind of thinking existed. I was talking about how I think,

Tim Villegas

is there any connection between being a visual thinker and autism or neurodiversity?

Temple Grandin

What tends to happen in autism is that most people with a different kinds of thinkers the object visualizer, who thinks in photorealistic pictures, horrible at abstract math, the mathematical person who thinks and patterns most people are mixtures. When you get on the autism spectrum, you tend to get an extreme, you might get extreme object visualizer and extreme mathematician. Autism can come in all three flavors of thinking or verbal thinker who knows every fact about baseball or some other thing that they're really interested in. They can be really good at specialized retail sales, if they get some social coaching on how to interact with customers. But I worked with people that were definitely autistic and had 20 patents each well So what

Tim Villegas

do you see? You said that the principal at the school that you did the book signing, didn't know that visual thinking was even a thing. So what do you

Temple Grandin

think it was a thing?

Tim Villegas

Well, what do educators need to know then about visual thinkers and how to spot them in classes?

Temple Grandin

Well, if you have a lot of hands on classes, visual thinkers, often very good at art, art and mechanics go together, art and mechanics. And they're really good at building things and understanding mechanical things, if they have access to them. And then you're pattern thinkers. Let's teach those kids computer programming. Let's teach them higher math. I just talked to family the other day, their six year olds bored stiff with baby math, move on the head. Board kids turn into baby problems. If he can do one, high school math in was seven years old, let them do it. May need he may need help of reading.

Tim Villegas

Do you think that's a problem and just in how we've constructed our standards that we are requiring too much of one kind of math.

Temple Grandin

I think that's part of the problem because someone like me should just take business math, which I can do. You know, so I got it, you know, invoice clients cost out jobs. To payroll, you'll stuff you need to do to fortunately had a very good mentor, a contractor that saw my drawing ability, and I can show you some like drawings to the way I used to sell jobs is a simply would show off my drawings. Now I know that Oh, show up on the podcast.

Tim Villegas

No, but can you describe the Can you describe the drawing?

Temple Grandin

It's drawing for beef packing plant ramp system. Okay, you might wonder why it's curved. You see cattle like to go back to where they come from. Also, by making it curved that they don't see commotion that might be going up at the other end. Right. That's another reason for doing that.

Tim Villegas

Is this the did you write about that? In thinking?

Temple Grandin

I wrote about that thinking in pictures? Now at the time I did thinking in pictures, I didn't know that there was scientific research to show that there's a difference between an object visualizer and visual spatial, you see, and in my visual thinking book, I've looked up all that research. And and there's been quite a lot of it.

Tim Villegas

You still are a professor at University of Colorado,

Temple Grandin

Animal Science at Colorado State University Colorado State last on livestock handling and behavior. And see an animal lives in a sensory based world not a word based world. I tell students want to understand your dog, your puppy, for example, you've got you've got to get away from verbal language. What's your puppy smelling? What's he seeing? He's got a nose that's 100 times more sensitive than our nose. And I just read some new research at Cornell University did with high definition brain scanning. And the found out that the dog has a big internet circuit that goes from the old felt factory areas of the brain to the visual cortex. Think smell pictures.

Tim Villegas

Right now. pictures

Temple Grandin

I took one look at those brain scans from Cornell University and I go wow, that's trippy. Imagine that.

Tim Villegas

Okay, yeah. Cuz you you've mentioned how you who you think of a or if someone says a word, that you have a lot of different pictures that are alleged,

Temple Grandin

right? They they in the HBO movie about me there's a salesman when he says shoe, the worst show and a whole bunch of shoes come up.

Tim Villegas

You see nothing that says you describe it?

Temple Grandin

Well, they use 50s and 60s, pictures of shoes. And they just came up like a series of PowerPoint slides like that. Or back in my generation 35 millimeter slides.

Tim Villegas

Yes. Yes. Now now PowerPoint slides. Exactly. So that that would be the same thing. If you're saying a dog's sense of smell will trigger pictures as well.

Temple Grandin

Well, what I don't know. I just know that is new research that shows the dog has this gigantic circuit in the brain. This was just discovered that in the last year. And the olfactory areas of the brain have wired up to the visual cortex. So maybe he could maybe he makes a smell picture and space, different smell. I don't know. All I know now is that that circuit is there.

Tim Villegas

So in the in the book, you You seem to make the connection between how we we undervalue animals because they're not verbal, right? They don't

Temple Grandin

think some of the disk Question we still have a session going on, you know, where some people say maybe a puppy is not true. We can't conscious. I don't think you believe your puppy is not conscious. Right? Yeah. And I think a lot of this gets down to people that are very verbal based, might have a hard time imagining how you could think would work. Well, I can think without words. And I was just at a big thing, a big corporate meeting yesterday that we were discussing airport access for blind and deaf. So I just started getting all these pictures of, of our different airports I've been in and imagining a blind person with an app on his phone and as you walk, because the blind person told me, finding gates, golden does crazy, where he's walking through the terminal and the gate numbers are getting announced to him with an app on the phone is to just see that. Now how does it read the gate numbers without having to have a complicated artificial intelligence program? Well, I can take little transponders maybe like what they use for toll roads, and stick them on the gate signs. That right off the shelf technology. So I want to cost a fortune. So I'm always trying to do something simple and practical. So the airport can't give you any reason for not doing

Tim Villegas

I think the I think, you know, educational advocates who want to change things in schools, I think that that is a that's a lesson that we can learn is finding things that are practical, that don't cost money. That's

Temple Grandin

what I did you see when I did the work for the meatpacking plants, and I trained the McDonald's people how to inspect the plants and use my scoring system. It was real simple. The plan had five numbers I had to make. And, and to attain that out of 75 plants, biggest ones in the country, beef and pork both, only three had to buy expensive stuff. All the others we did with things water non slip flooring had to go in. That's not a capital expense. blagging cows are afraid of the dark training, and three plant managers had to be removed.

Tim Villegas

But why? Because it does work. It does come down to people

Temple Grandin

not to shove equipment down their throat.

Tim Villegas

Right. But going back to you know, plant managers being removed, you know, sometimes I mean it a lot of it has to do with management, don't you think?

Temple Grandin

Oh, yes. Because I would say half the fixes this management, that's one of the most important things you can do. And we constantly have to stay after that.

Tim Villegas

Something in the book that I wanted to discuss, was you talking about the disability trap or having a disability mindset? What does that mean?

Temple Grandin

Well, I see too many parents have a kid that's autistic, maybe doing well in high school, getting good grades, not learning work skills, also not learning life skills, like shopping. I'm having a lot of parents that can't let go and get their child out doing things like going in a store, buying something themselves, learning about money. And doing laundry, just learning life skills. And this is you see, and so parents are almost holding them back. They're not learning how to do enough stuff. They're not getting out and doing enough stuff.

Tim Villegas

What do you think families are falling into?

Temple Grandin

I think they get locked in to the label. I have another book called navigating autism I do with Deborah Moore. And the whole premise of that book is parents get so locked into the label. They don't see what the child can do. Okay, I can't do algebra. That's just not going to happen. There's a whole bunch of other stuff I can do. In fact, Stephen Hawking, the famous scientist, right for a died, told The New York Times concentrate on those things a disability does prevent you from doing well. And he could do math in his head super well. That's what he did. You see, they get a mindset. And I've seen this over and over again, you got a 16 year old doing really well in school, good grades, never has gone into a store and bought something by themselves. That's getting locked into the label. I was shopping seems like

Tim Villegas

a problem. Yeah, yeah, that seems like a problem. If if you haven't done that yet, right. Now, despite, you know, whatever sort of disability label you have, you know, because he I mean, you want, whether you have whether you have a diagnosis or not. You still want it.

Temple Grandin

I've worked with dead 20 patents each. And the industry is using their stuff and I since they're not disclosed, I have to be vague about things they made. Yeah, sure. If you're in the livestock industry, you've seen the stuff at Newsted

Tim Villegas

Right. So, also in the book, you seem to be critical of, I guess, autistic people who want to build their bit like a business around speaking about autism or advocacy. Well, I'm

Temple Grandin

not against advocacy, but I tell them, You're a better advocate. If you can talk about how you, you got a job and you held that job, one thing I learned was to sell my work. I sold Cargill, by showing on a drawing very similar to this one that your listeners will not be able to say. I sent him a drawing and I sent him pictures of jobs. I learned to sell my work. They took one look at those things. And I sold Cargill and I designed the front end of every Cargill beef plant in North America. That steel and concrete work and then mechanical stuff to

Tim Villegas

where right so you weren't getting jobs necessarily based because you were autistic. Oh, not getting jobs and still

Temple Grandin

70s biggest barrier for me in the 70s was being a woman. Autism was not an issue being a woman. Yeah, huge issue. But I recognize doors to opportunity. There's a scene in that movie where I get the editors card. And I realized if I wrote for our State Farm magazine that would help my career. And I got a reputation covering industry meetings really accurately.

Tim Villegas

Yeah, so you use the strength that you had already.

Temple Grandin

And fortunately, I learned how to write lot of students today have terrible writing skills. Because they never report they never had teachers mark up the work and make them correct the grammar.

Tim Villegas

As much as as much as you say that you're a visual thinker, you're an excellent communicator via words is that the are words also visual for you?

Temple Grandin

Well, when I say words, okay, right now, I just saw the alphabet in my third grade classroom posted over the blackboard, the green board. I got that picture flashed into my mind. To board kind of narrate the pictures, you must be your real verbal thinker.

Tim Villegas

I guess, you know, I was thinking about this earlier. So when I go to sleep, when I you know, when I'm trying to fall asleep, I will often like, think about the things that I need to do for the next day as a way that when you

Temple Grandin

think about when I think about the things I'm going to do for the next day, like tomorrow, I've got a seminar. I'm seeing the building right now the the classrooms in the building where we're going to be doing that meeting. And I'm seeing those classrooms right now. Yeah, I teach my course. And right now,

Tim Villegas

I guess I am more of a verbal thinker. And I actually, so audio, to me is a is something that I really enjoy. So, you know, obviously, because of the podcast, I enjoy producing audio and doing interviews and stuff like that. But I also consume a lot of content with audio, like someone's speaking, and I tend to really enjoy that and retain the information that way. Rather.

Temple Grandin

You would rather read it Oh, yeah, absolutely.

Tim Villegas

Yeah. See, I I mean, I enjoy reading. But if I have a choice, I'll pick the audio.

Temple Grandin

Well, the problem is I don't retain audio. Like if I have to listen to audio, and retain it. I have to take notes.

Tim Villegas

Yeah, I think if I read it, I have to take notes.

Temple Grandin

No, I'd rather read it. And, and I and if I have to listen to an audio on to remember some of the super important things. I need to write it down. Usually.

Tim Villegas

Yeah, that so? So I don't know. I mean, I guess I'm I would be much

Temple Grandin

more auditory, much more affordable. Now. I do a lot of talks with big corporations. I said, the first step is realizing that different types of thinking exist, and the things they can do for the company. Okay, so let's say to tech company as a travel website, for example, I can work on the interface. The programmers work on how it works. Well, when I signed into their corporate office, I managed to erase my signature like five times because I kept pressing the wrong thing. Well, I think they're going to be changing their interface on that, too. It wasn't clear when we talked about an interface. Okay, like one of the airlines you go to check in and they want to get you on other flights because they're packed solid. So you, they want you to click got it. And I go wait a minute. If I click got it, am I going to race my reservation? Well, now I know that without

airline that will not erase my reservation. I bought, when I first did that I got my type glide. If I click got it that's going to take my reservation away. I don't think that best interface

Tim Villegas

are you good directionally, like, like, do you have like a map in your head with where to go, what I like

Temple Grandin

to do, I absolutely despise just using the GPS because it tells me too late when to turn my buffer to get on Google Maps, a warm map out my whole route. So I kind of see it in my head. And then I make little checklist of each turn 50 miles, I 70 aced it at exit number, the next bullet point or or thing on the checklist, exit you know, 316 I go. Turn right south, something like that. But then I kind of see the overall math. See, I'm not a sequential thinker. I want to look at the map. I like to know where I'm going when it's someplace new before I go.

Tim Villegas

So do you consider yourself a spokesperson for the autism community?

Temple Grandin

Well, I'm just one person that tells felt experiences. And basically right now I'm in my 70s. Now, I want to see the kids that are different, get out and get great careers. Because all the most fun stuff. People that I know are autistic that I've worked with, on designing equipment does skilled trade stuff, designing drafting, for almost fun stuff we ever had was sitting around discussing how to build things. That was really fun. And I want to see the kids that are different, get out and do those fun jobs, or their mathematical type, get a good tech job where they're really good programmer. A wants to see him get those good jobs. And I've had parents say to me, once we got the kid out working in a job they really liked, oh, he just blossomed, she blossomed. She blew. I hear that comment over and over and over again. I want to help people get good careers. Also, we need the skills, and we need them really badly. Especially object visualizers.

Tim Villegas

Yeah. And that's kind of your the premise of the book, right? You want people to know that these types of thinking,

Temple Grandin

and all these types of things exist. And when a kid gets a label, whether it's dyslexic, ADHD or autism, you tend to have more extremes, like an extreme object visualizer, or an extreme mathematician, or opposites, or an extreme word thinker, where so called regular people, much more mixtures.

Tim Villegas

And how can schools specifically support all news and girls,

Temple Grandin

a lot of it varies with state, having all the hands on classes in the schools. And you can see what the kid gravitates towards. Because what I found on careers, you've got to have exposure. Like a single welding class, or maybe a music class, now I was exposed to musical instruments. I was horrible at playing them. But I was exposed to it. I had a chance to use the same computer, the Bill Gates used the exact same computer. He could do it, I couldn't. But I was exposed to it. So I'm a big fan of exposing students to lots of different stuff. Because what I'm finding on careers for a lot of people exposure when you're young, then mentoring. But you do the exposure first.

Tim Villegas

What does that mentoring look like? Because there's far too few, like school counselors. And so I

Temple Grandin

had a great science teacher. And I was not interested in studying. And he gave me interesting projects to do. And I got motivated to study because bad grades in history and English was just goofing off. And I now study because I wanted to become a scientist. I now had a reason to study. He was important mentor, my science teacher. And then it was Jim the contractor, starting a little tiny steel and concrete business. former Marine Corps captain, he sought me out. He showed me how to set up my business. I didn't know how to do that. Okay, that's an example of mentoring. I get asked how to get in the cattle industry. I came from back east I got exposed to it as a teenager on my aunt's ranch. It's exposure first, then mentoring A lot of people on the autism spectrum that have been successful in the workplace, have their own businesses. That's common. And the people I work with that definitely were autistic, they owned their own businesses. And then they usually have to have someone else to help them more with a business part of it. Payroll. I'm ordering materials bidding jobs. The other problem with educators is they don't know anything about industrial stuff. They haven't been in factories, most of them.

Tim Villegas

Well, that's not their education. Right?

Temple Grandin

No, and when where we're really losing it is what the object visualizers like me. Yeah, elevators and escalators, people working on that older and older and older. We need those skills.

Tim Villegas

Any other thoughts that you want to make sure educators understand about visual thinkers?

Temple Grandin

Well, first of all, we got to know they exist. And I think we're gonna have to start looking at some of these math requirements. You see the kids that go the tech route in Europe, I mean, you do some business math, which is arithmetic, I have no problem with that. Or I use an

algebraic formula. pi times radius squared size hydraulic cylinders, because that's a formula for a very specific thing. Sizing hydraulic cylinders, okay, that I would know how to do. But you see the math in the abstract? No, I can't remember it. There's nothing to visualize. See, those I've talked with, as I've been talking about this, I have so many people come up to me. So well, I'm one of those kids have flunked algebra three times, and I can't become a veterinary technician. You don't need abstract algebra to be a veterinarian or a veterinary technician?

Tim Villegas

Well, I think there is, again, a lesson for us to learn as educators that we have all these different kinds of thinkers, we really should be designing and supporting.

Temple Grandin

Let's talk about how students lament pre skills. Well, let's go back to the food processing plant, that the group engineer does some more mathematical parts, when load snow load, power requirements, water requirements, boilers and refrigeration. The people in the shop, that maybe just start out with the welding class, they're designing all the clever, mechanically clever equipment. And more and more of that's coming from Italy, and Holland and places in Europe. And you go back and you look up the educational system for those different countries. Kids can either go on university route or tech route in Italy, they have a third thing they have an art route. Because isn't that an argument industry?

Tim Villegas

Isn't that an argument for project based learning? Like we should be moving? Yeah. And the

Temple Grandin

thing is, I think we need to be looking at what's the ultimate goal of education. Where's the student 10 years after high school, I was doing the projects that were shown in the movie 10 years after high school. And I can tell you, one of the things that motivated me to do those projects, is I wanted to prove to people I was not stupid, that motivated me.

Tim Villegas

Working on projects, and working on projects, together with different kinds of learners, seems like more of a real world application.

Temple Grandin

In the book, visual thinking book, I tend to be kind of disorganized, because my thinking is associational. So I wrote all the rough drafts for the chapters, and Betsy, my verbal co author, rearranged and made up or linear for the verbal thinkers. So we deliberately had complementary skills there. My wrote visual thinking, because I'm very concerned about skill loss. I'm seeing too many smart kids that would be very good at things like mechanical things, or art, or photography, or working with animals, or just playing video games in the basement rather than in a job that they really would love. And then I'd see mathematical thinkers. That might be you know, young kids are getting behavior problem in school, because you're making them do baby math. They need to be moved ahead into more advanced math.

Tim Villegas

Dr. Temple Grandin, thank you so much for being on the think inclusive podcast. We appreciate your time.

Temple Grandin

It was great to be here.

Tim Villegas

Thinking inclusive is written, edited and sound designed by Tim Villegas is a production of MCIE. Original Music by miles credit. If you enjoyed today's episode, here are some ways that you can help our podcast grow. Share it with your friends, family and colleagues. And if you haven't already, give us a five star review on Apple pod Kassar Spotify. Special thanks to our patrons Melissa H. Sony A. Pamela P. Mark C. Kathy B. Kathleen T. Jarrett T Gabby M. Aaron P and Paulette W for their support of think inclusive for more information about inclusive education or to learn how MCE can partner with you and your school or district, visit mce.org. One last thing temple wrote an op ed in the New York Times called society is failing visual thinkers and that hurts us all. I'm going to put a link in the show notes. It should be unlocked. Hopefully it'll stay that way. Go check it out. And let me know what you think. Thanks for your time and attention. And remember, inclusion always works.

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