

Nick Colangelo: Tony Wagner is an expert in residence at Harvard University's Innovation Lab and senior research fellow at the Learning Policy Institute. Tony is author of six books including his latest 'Most Likely to Succeed: Preparing Our Kids for the Innovation Era.' Also, 'Creating Innovators: the Making of a Young People Who Will Change the World.' And his international best seller, 'Global Achievement Gap.'

The Window is brought to you by the Belin-Blank Center, part of the College of Education at the University of Iowa. And I'm your host, Nick Colangelo.

Well, Tony, welcome to The Window, it's great to have you here today and I look forward to having a conversation about education, where it is now, and where we're headed. You have some bold ideas, some strong ideas about where we need to go in education. But before we get to that, I would like to know, share a little bit about your own educational experiences when you were growing up. What was it like?

Tony Wagner: Well I became committed to transform education because in fact I hated school. Not just sometimes, but pretty much most of the time. I was bored. In fact I dropped out of high school briefly as a senior, finally went back. I dropped out of two different colleges. So my commitment to becoming a teacher was kind of influenced both by my really stunningly mediocre school experience and also by being kind of a child of the '60s. And growing up feeling that there was a world that needed improving and I felt that I had to make a difference. So those two forces sort of came together early in my decision to become a teacher.

Nick Colangelo: That's quite a start. How was that for your parents?

Tony Wagner: Well you could ask them but they've passed. It was a struggle. It was very hard for them to understand me as a kid and why I didn't like school. And they knew it wasn't that I didn't like learning because in fact I was reading constantly, I was asking all kinds of questions. So I had a very active learning life. It just didn't translate into conventional achievement. So when I eventually got a masters and then a doctorate from Harvard needless to say they were shocked.

Nick Colangelo: Yeah. I imagine. But you know someone like you that's had sort of that nontraditional start I think often finds one or two mentors who see something in you that perhaps others missed. Could you share, was there a mentor in your early years that really had an influence on you?

Tony Wagner: I had a transformational experience with an English teacher in my senior year. I had for several years been writing. I wanted to write. My fantasy then was to be a novelist. And so it wasn't my teacher of senior English, my formal teacher of record, it was another teacher at the school whom I approached. Very kindly English gentleman. Sadly I can't recall his name and have made significant efforts to track him down, the school is closed so I can't find him.

At any rate, I said will you teach me to write? And he said, "I'd be delighted." So every week he'd give me an assignment to write in a new genre. Try a childhood reminiscence, try a dialogue, try a monologue, try description, try a critical review. And I would sit with him a week later having completed the assignment and he'd comment on it. And he would always comment on one or two things he thought that I had done fairly well, maybe a word choice here or a sentence there, and then make a couple of suggestions. And not only did it profoundly influence my love of writing, I did far more work for that sort of noncredit course than I'd done for any three other courses.

But it also influenced the way I ended up teaching writing as an English teacher myself. Using the conferencing method. And introducing students to a wide variety of genres as an approach to developing a student voice. So it was profound in several respects.

Nick Colangelo:

I think what you're speaking to is the powerful impact that one individual can have on a young person. And I think it's a good reminder for all of us who care about education that never underestimate what one can do. You do refer to yourself as a recovering English teacher. And usually recovering means there's behaviours you don't want to do anymore, you want to change. Knowing what you know now, Tony, how would it be different if you went back and taught English?

Tony Wagner:

Well I did mean recovering in the best sense. I still think of myself as an English teacher and miss teaching. What I would do different, that's a very interesting question. I think I would probably have somewhat higher expectations of my students. I think I put a premium on students discovering their interests and discovering ... enjoying learning. I did learn this kind of part way through my writing experience, I worked with at risk kids in my first five years of teaching high school. And I worked with one girl who was at risk of dropping out and she was wanting to write poetry. And she went from writing snippets on scrap paper to then writing complete poems to then writing revisions. And then to having a collection of poetry.

And I felt that I had succeeded with her, she reengaged with school, she was talking about going to college. But then when she started writing a college application and an essay she was totally incompetent. And I realised that I had missed a piece. That I had not expected enough of her in terms of helping her see what she would need to succeed as an adult, and not just rediscovering an interest and a reason to stay in school. Both were important and I had neglected one. And that was a mistake I later corrected in my subsequent teaching years.

Nick Colangelo:

You've made a lot of comments about where we are in education today and more importantly where we need to go. I know one of the things that you said is knowledge is really much more of a commodity, it's acceptable, it's accessible to us. But knowledge is not enough. It's not what you know, it's what you do with what you know. And you've come up in your work with seven competencies that you think really any young person must either master or be working on so

that they can be successful in the future. And this was a strong part of your message for me. Can you talk a bit about those competencies and how you see them working with any young person in terms of determining their future?

Tony Wagner:

Well that list, what I call the seven survival skills, emerged from a series of interviews with a wide variety of executives. Literally from Apple to [Unirial 00:08:29] Labour, to the US Military. I interviewed executives to understand what were the skills that were most important to them. Whether it was white collar worker, blue collar worker, military, and also what were the gaps that they were seeing. And that's where the seven survival skills came from. And that sort of subsequently got a lot of interest and so on.

As I think about it now I would distil them further still from those seven. The seven are still important but when I started doing interviews and research for the next book called 'Creating Innovators' I discovered that skills weren't enough. There were also sets of dispositions that were incredibly important. We talk about perseverance, tenacity, all of that is absolutely important of course. But also the willingness to take initiative. The willingness to take risks, to learn through trial and error.

This is one of the core contradictions of our traditional culture of schooling. We penalise mistakes in schooling. And in fact the more mistakes you make the lower you fall on the bell curve. Whereas the innovation era demands that you learn through trial and error through rapid prototyping. You know going from one dot oh to two dot oh. And actually rewards people who make more mistakes sooner.

So there are a series of poor contradictions in the traditional culture of school. Not just in its inability or lack of focus on teaching core competencies but also in its inability to develop the habits and dispositions that are absolutely critical for young people to thrive today. Not just in the workplace, I want to make this really clear. The skills needed for work, for lifelong learning, and for active and informed citizenship have converged, I think for the first time in human history. They are the same skills. So the survival skills that I write about, the dispositions that I talk about in Creating Innovators are essential for work, learning, and citizenship in the 21st Century. They're indivisible.

Nick Colangelo:

You've spoken quite a bit about the importance of not being afraid to fail, persevere, I think you've talked about using the 'F' word in schools for failure. And I've heard the term fair early, fail often, which is really the anthem for a lot of innovative people for a lot of entrepreneurs but you don't hear that in school as you've said. What could schools do so that they don't scare kids about failure?

Tony Wagner:

So I really do mean I want to ban the 'F' word in school, in fact both of them. But we won't talk about the other one. But here's the situation: we human beings learn through trial and error. How did we learn to talk? How did we learn to walk? What if we said to kids, "I'm sorry, we're not gonna allow you to talk until

you can speak in complete and grammatically correct sentences. No trial and error. And by the way we're never going to allow you to ride a bike because we know you're gonna fall." So human beings learn from trial and error over and over again. I'll ask an audience, how many of you have learned more from your mistakes than your successes and every hand in the room will go up.

But school is different. We don't allow for mistakes. So I think we need to understand that all important learning involves trial and error. The only failure I acknowledge is the failure not to show up. The failure not to try at all. The only grades I can justify are A, B, or incomplete. Which is by the way how the adult world works. You know do you want to fly with a C minus airline pilot? Someone who was pretty good at takeoffs but really bad at landings? No I don't think so.

So the challenge I think is to reimagine our assessment system, not as a sorting system where somebody has to fall somewhere on a bell curve, but as a competency system. Where a B stands for students having met a performance standard that stays the same for all kids which is varied by the amount of support a kid may need or time a student may need to reach that performance standard. And A's are reserved for real human excellence. There's no room for pluses and minuses, that's not how the adult world works. And a student's work is simply considered incomplete until they have met that performance standard.

Nick Colangelo:

You know in the world of intelligence research some people believe that in essence when it comes to a pretty high level of intelligence either you have it or you don't and that it's kind of seen as a pretty scarce commodity, as something fairly elitist. You talk about the idea of being innovative as if it's much more of a democratic quality. So let me ask you, Tony, do you believe that being an innovator is open about all students?

Tony Wagner:

That's a really great and a very important question. In my research I discovered that there are two very different kinds of innovation. One kind of innovation is all about bringing new possibilities to life. And that's rare. That's a matter of expedient talent converging at a particular time in history. Think of Steve Jobs and the iPhone. That's more a matter of nature than nurture.

Now here's the other kind of innovation. It is creative problem solving. And it's in every domain, not just in high tech, not just in science, but creative problem solving in customer service, in health, in education, in sustainability. And the good news is we are born as human beings curious, creative, imaginative. That is the human DNA. The most five year olds ask about 100 questions a day and the majority of kindergartners think of themselves as artists. Then something happens, we call it school. Because you see the longer kids are in school the more they become obsessed with getting the right answers as opposed to asking their questions and the less curious they become. And very few of them think of themselves as artists by the time they've completed high school.

So I think we really need to understand that there are certain innate human capabilities that schools must actively nurture and develop instead of frustrating and thwarting as they do today.

Nick Colangelo: You know there are a number of students out there right now who have a lot of tailwind going for them. They have very high GPAs, they have high standardised test scores, they're adept at figuring out the correct answers to problems and so forth. What would you like to say to those students?

Tony Wagner: Look out. I would say you know you learn how to play the game of school and good for you, I get that. That's what your parents expected, that's what your teachers expected. But please understand the game of school and playing it well bears less and less relationship to life and thriving in the adult world. And I'll give a very specific example: Google. Google used to only hire kids with Ivy League degrees and only interviewed those who had the highest GPA and test scores, right? Well along comes Lazlo Bock, senior VP of People Operation, analyses the data like a good Googler and discovers that all the indices that they'd been using for hiring and promotion at Google for years are "worthless." No correlation.

He goes on to say that the skills you need to succeed in a competitive academic environment, getting high grades, high test scores, there are no relationship to the skills you need to succeed in the innovation era. So what does that mean? Google no longer asks for a transcript. Google no longer requires a college degree. The word college does not even appear on their jobs website. They interview people. They use collective human judgement informed by evidence to make key hiring and promotion decisions. And 15% of Google's new hires don't have a college degree at all.

And guess what, it's not just Google. There was just in the last two weeks an announcement of 15 top companies all of whom have eliminated the requirement of a BA degree to go work at their companies. So this is the new world. This is a new world where doing well at the game of school does not equate or guarantee you opportunities for really good jobs. Because the world doesn't care about that diploma which is fundamentally a certificate of time served, not a certificate of mastery.

Nick Colangelo: If you can just speak a moment, you know we've been talking about innovators, innovation. What do you mean by a person being an innovator?

Tony Wagner: Well again it's someone who's a creative problem solver. Someone who can ask really good questions. What I've discovered and actually creative problem solving isn't the best term because what I've learned in the world of innovation is that problem identification is actually the more important capability. Problem solving comes comparatively more easily. Einstein once said if he had an hour to solve a problem he'd spend the first 58 or 59 minutes determining that it was the right problem that needed solving. Or another way he puts it is he says the formulation of a problem is often more essential than the solution.

So creative problem identification demands that you ask good questions. That you're able to look at the evidence, look at perspectives, to think about cause and effect. To think about 'what if' possibilities as well as social and individual significance. What are called essential questions. And to also look for what's not there. What's not being said. That's what I find to be a very rare capability. Not merely to question what's there but to observe simply what's missing from this picture. What ought we to be looking at or thinking about that's not here, that we're not talking about?

So to me those are incredible capabilities. And then it's also the ability to connect with others. To collaborate, to empathise. You know the heart of design thinking is empathising with the person, the customer, the people who have a problem or are challenged by something and you're charged with finding a solution, you and your team. But you've got to first start by being an anthropologist, by empathising with them. So and then collaborating with your team.

So you look at those hard and soft qualities. The hard quality of critical thinking, asking good questions. The soft skill of collaboration and empathy. To me those are what come together in the capability of becoming a very good innovator. And then you add to that recipe grit, perseverance, tenacity, the ability to take initiative, self discipline, and so on. Those are I think what are essential.

Nick Colangelo:

This theme permeates your writing, your talking. I think most people when they think about innovation think about breakthroughs in technology. Some kind of a new startup. You're always very good about adding that soft skills dimension. That what you're also talking about is people who can work well in teams, who care about what they're doing. It's not so much about money it's about making a difference in society.

Tony Wagner:

Well that's right. What I discovered when I interviewed a wide variety of young innovators for the book *Creating Innovators* and there were an equal amount of men and women, they were innovators in high tech, they were innovators in the social sphere, social entrepreneurs, creating programmes that were making a difference for people. There were some who were from privileged, some who were from poverty. But they had a few things in common. One of the things they had in common is that there had been at least one teacher who had made a significant difference in their lives. When I interviewed all those teachers and discovered that they were all outliers. Teaching in ways that were fundamentally different than their peers yet remarkably similar to one another. Those of whom I interviewed who were in the university environment none of them had tenure. Because they had put teaching above research in their professional commitments.

I also talked to the parents. I found that both parents and teachers had encouraged play, passion, and purpose. And by purpose I meant that those teachers and parents had sort of instilled the simple lesson that we are not here on this earth only to serve ourselves. We have some responsibility to give back

and to make a difference. So all of these young innovators, both from privileged and poverty, and those of whom I've met from around the world subsequently share that belief that they want to make a difference.

They want to do work worth doing. They do their best work in school when it's an interesting project. It's intrinsically interesting. They do their best work in the workplace when they feel they're making a contribution. And I think that these are things that we as adults and teachers and parents need to understand about this generation and appreciate and also encourage in future generations.

Nick Colangelo: You know that came out, I was reading about your case studies, the play, passion, purpose. Can you talk a little bit about that first P, play?

Tony Wagner: Sure. What parents did that I discovered that was so interesting was that they really valued exploration and curiosity on the part of their children. That they understood the importance of kids trying new things, getting outside, fewer toys, toys without batteries, limiting screen time. Teachers trying to create a space where young people could have a sense of even adult play. It was Ed Carrier who teaches Medtronics at Stanford to engineering students who talked with me about bringing an element of what he calls whimsy into the designs of his projects for his teams of students. Because he found that when there was a little bit of an adult's sense of play in their work they did better work.

So when you're talking about the play of a child, which is fundamentally how we initially learn and discover the world and try to make sense of it, or the play of an adult in a laboratory environment you're talking about having a certain kind of lightness of being. And understanding that necessity isn't always the motor of invention. In fact play is. Homo Ludens is a great book by a Dutch historian by the name of Huizinga and as the title implies "man the player," he discovered that many of our most important breakthroughs came through adult play. Serious play, disciplined play. The work of scientists and artists and musicians and so on. All of that is kind of an adult play. And we need to understand that they may be the highest art form as well as the highest motivation of human experience.

Nick Colangelo: Yeah and since you're saying play is so important I'm sure there's a message in here for parents. You know there's a lot of books out there that tell parents don't waste any time, get going, get your son or daughter on a track so by the time they're ready to apply to college they have their resume in order. You're saying something different, what's your message to parents concerning play?

Tony Wagner: Well I'd start with acknowledging parents' anxieties. Today parents are frightened. They see a far more competitive world than the one they grew up in and they want to give their children a competitive advantage, I understand that. And they're relying on old ways of thinking for that competitive advantage. Get your kids into the best school. Pressure them to get the best grades and to do all these extracurriculars to create the best college application. To go to the best college.

Well several problems. First of all kids feel tremendous pressure. You know I've heard the statistic that half of Harvard college undergraduates take some form of medication. And that does not include that self medicating they do, kind of like every weekend. I don't know if that number's true but I spoke to a number of students at Amherst College recently and they'd talk to me about the tremendous pressure they felt to be the perfect little child, to have the perfect little GPA, to have the perfect little extracurricular activity, to get into the perfect little college.

Now here's the problem, that no longer works. That no longer is a guarantee of adult success and wellbeing. Well what I've discovered is a better competitive advantage is developing children's curiosities, their interests and their sense of purpose. Giving them opportunities to do work based internships, summer exploratory programmes, places where young people can discover who they are and what they're interested in. So when it comes to a college application or even more importantly a work application they can talk knowledgeably about who they are, what their interest are, what their skills are, what their capabilities are, and what they might be able to and want to contribute in this next phase of their life.

That young person who really knows who he or she is and has had a set of experiences that he or she can reflect on and talk knowledgeably about has a huge competitive advantage over the straight A kid who's only worked for the grade and under pressure from adults and has no idea who he or she is or what his or her interests really are.

Nick Colangelo: Again Tony this has been a consistent message in your writings. You don't want to just see kids be successful in life in terms of career and so forth. You want them to be successful as human beings, that human touch. And when you talk about being creative, when you talk about being innovative, it always has that emotional element with the idea of potentially being successful in career. And I think that's a distinguishing feature of how you see things.

Tony Wagner: Well you know it doesn't start with me. I read Jean Piaget, the Swiss developmental psychologist, when I started my teaching career and I was very influenced by him and by doing and by others. But I vividly recall Jean Piaget defining the ultimate goals of education very simply. He simply said the aim of education must be to overcome egocentrism in two domains. He said intellectually overcoming egocentrism is learning to reason, to weigh evidence, to not really on superstition and so on. Emotionally he said learning, overcoming egocentrism, means learning what he called 'reciprocity' but what we would call 'empathy.' The ability to put yourself in another person's place.

And I don't even particularly like the term success. I think of thriving and wellbeing. And success may be an element of that. But I think for all of us to thrive and to be well as human beings we need to continue to work all our lives at overcoming both of those forms of egocentrism.

Nick Colangelo: You know you talked a lot about the importance of mentors and you call them, at least in your study, outliers. They didn't always fit in, may not necessary ever make promotion and tenure. There's an analogy in sports. So take somebody like Michael Jordan in basketball, he was always seen as someone, not only was he good but he made others around him even better. Derek Jeter in baseball. It's not that he was so good it's that he made others better. So let me ask you in your work do these outliers who obviously very good teachers, did they have an impact on others around them or did it pretty much just stay within themselves?

Tony Wagner: Oh these teachers had a huge impact on the kids, on the students. That's how I discovered them. When I asked all of these young innovators again from privilege and poverty, men, women, technical innovators, social innovators about these teachers, they talked about the influence. They talked about how they had really opened the world up to them, provided them opportunities to explore, to experiment, to discover, to better know who they are. I've increasingly come in fact to define good teaching as coaching.

I think good teachers are not mere facilitators, I don't like that term, I think it's weak. I think great teachers are performance coaches. Coaching students to a higher performance standard. And I don't know that much about sports and about the examples you've mentioned but I do think that great teams have great coaches. Whether they are peer coaches, you know they come from peers, or whether they are coaches from the outside. And they're coaching everyone; the team collectively as well as individuals to a higher performance standard.

Nick Colangelo: Okay. And you know education's evolved over the years. We went from what we call an agricultural age to an industrial age to a information and now we can say we're going to an innovation age. Where do you see us moving beyond where we are today and is there anything in particular that you think we as a nation need to come to terms with so that we can take the next step in the 21st century?

Tony Wagner: Well I think there's two. I think it's very clear and it will require enormous innovations of every kind. And one is not just our national challenge, both are global challenges. And the first is sustainability, no question. I think our survival as a species is in peril. And I do not think our leadership collectively has the kind of urgency and understand that's required. And the second is growing inequities. Again around the world and very much in this country. And I think growing inequities are morally corrupting. I think they are economically and socially dangerous, volatile. And so from my point of view we need the best minds and hearts, the greatest innovations in really looking at those two challenges.

And what lies beyond those two, what unites those two I think, is a different understanding of an economic system that is not based on infinite growth in a material sense. An economic system that does not exploit either resources or

people. An economic system and a social system that really promotes and encourages growth and opportunities for all. I think those are the challenges that we face.

Nick Colangelo: Last question, Tony. You're a grandfather, I'm a grandfather, we have that in common. And I think part of being a grandparent is always dreaming way in the future. What would you like to see for your own grandchildren?

Tony Wagner: Well I think I've said it. I think what I really want to see is a world where there's more equality of opportunity. A world that is sustainable. A way of living that is sustainable. Where everyone can thrive and not at anyone else's expense.

Nick Colangelo: I think that's a key message that I'm taking away is thriving but not at anyone else's expense. That has a very solid, solid quality to it.

Tony, I want to thank you very much for sharing your ideas, your research, your passion for education and for young people. Thank you very much for being with us.

The Window is presented by The Connie Belin and Jacqueline N. Blank International Centre for Gifted Education and Talent Development, part of the College of Education at the University of Iowa. The Belin-Blank Centre is directed by Doctor Susan Assouline. The Window is produced by David Gould and Joshua Jacobs. Music for the Window was composed and performed by Daniel [Ganglioni 00:33:59] and John [Rapson 00:34:02]. Opinions expressed by guests on Window are their own and not necessary those at the Belin-Blank Centre, College of Education, or the University of Iowa.