

Developing Growth Mindsets: How Praise Can Harm, and How to Use it Well

It's a pleasure to be back in Scotland, I always feel so welcome and so stimulated when I am here. Benjamin Barber an eminent political scientist said a very wise thing; he said, I don't divide the world into the weak and the strong, or the successes and failures. I divide the world into the learners and non-learners. It's the learners who are the confident students. It's the learners who are the responsible citizens who make contributions to society.

And yet in my country, the US, we've done a number of things, only to help our students; we were thinking we were helping our students, but we were making them into non-learners. We put such an emphasis on being talented and gifted, and making every child feel brilliant, that we created a generation of students who feel that they cannot make a mistake; that they must be infallible. And we have created a generation of young workers who cannot get through the day without an award.

How do we make sure our students remain learners?

How can we make sure our students remain learners? That's what my research is about, and that is what I would like to share with you today.

In my research I have identified two mindsets that students could have about their intelligence. In the fixed mindsets students believe their intelligence is just a fixed trait; they have a certain amount and that's it. As you will see when students are in this mindset they worry about how clever they are. They don't want to take on challenges and make mistakes; they want to stay in their comfort zone.

But students who have a growth mindset think no, it's not fixed; intelligence is something that you can develop. It's a potential that you can cultivate through education instruction. Now, in a growth mindset it's not that a student believes anyone can be Einstein, or that everyone is the same. But they understand that even Einstein wasn't Einstein before he spent years and years and years of dedicated passionate labour. So in the growth mindset talent is just a starting point; you jump off from there.

I am often asked "So which mindset is really true?" and what is so exciting now is that more and more research from cognitive psychology and from neuroscience is producing evidence for the growth mindset. Every few weeks it seems now, articles are being published showing that even the most fundamental aspects of intelligence can be trained. And not just in young children, but in older individuals as well. The brain has so much more plasticity than we ever dared to imagine. Even as adults we are generating new neurons, and that was never known before. Does a student hold the same mindset in different areas? Not necessarily. A student can believe that their personality can be developed, but their intelligence is fixed. Or their language abilities can be developed but their mathematical ability, well that's fixed, or vice versa. But whatever mindset they have in a given area that will mould their motivation to learn.

Can mindsets be changed? Can they be taught? Yes, and that's what's so interesting. When you leave them alone they are pretty stable, but now that we understand what a mindset is, we can go in and change it. And when we do that we transform student's motivation to learn.

How do mindsets work? They work by creating an entire psychological world for students, where everything has a different meaning, and I'll be going through this in terms of the three rules of the mindsets. In telling you about the mindsets I am going to be focussing a bit on a study we did of hundreds of students who were making the transition to seventh grade; which is a very, very challenging transition in The States. The work gets harder, the grading gets more stringent; the environment becomes less personal, and a lot of students turn off to learning. And we wondered would a growth mindset help students get across that transition. So, at the beginning of seventh grade we measured student's mindsets. We saw who believed their intelligence could be developed; growth mindset. Who believed it was fixed amount and that was that; fixed mindset. We asked them a number of other things, and then we followed them over the next two years looking at their grades.

Mindset Rule Number 1

So, the first thing we found is in a fixed mindset rule number 1 is look clever at all times and at all costs. And if you are not going to look clever, don't do it. But in a growth mindset where you believe your abilities can be developed, the number 1 rule is learn, learn, learn. And in this study we found fixed mindset students told us "The main thing I want when I do my school work is to show how good I am at it". The growth mindset students didn't say things like that. They said "It's much more important for me to learn things in my classes, than it is to get the best grades". They cared about grades, but they cared even more about learning. When we looked at them and we graphed their grades over the next two years we saw this; they had entered with exactly equivalent achievement, but by the end of their first term, their grades had jumped apart pretty dramatically, and their grades continued to diverge over the next two years.

We found the same thing with college students who were in a pre-medical curriculum. Now, nobody cares more about grades than pre-med students; they have lived their lives for this moment; their parents have lived their lives for this moment, and yet the students with a growth mindset said they cared even more about learning. And when we looked, at the end of their term, the students with the growth mindset had actually earned higher grades, even controlling for past achievement. They did this because they took charge of their learning; they studied more deeply; they managed their motivation; they managed their time. And if they got a poor grade on their initial exam, they made sure to pull it up. But when students with a fixed mindset got a poor initial grade they thought "I guess I am not good at this" and they didn't change the way they studied, or the information they gathered, or the resources they used in their environment.

More than any study we have ever done, the study I am about to tell you about shows dramatically how a growth mindset turns you toward learning, but a fixed mindset turns you away from learning.

Learners and Non-Learners in Action - How do mindsets control our attention?

In this study we brought students one at a time into our brainwave lab. We outfitted them with a cap full of electrodes, that you see here, that measured the electrical activity from different parts of their brain. We were especially interested in measuring the activity ... this is a joke ... from a part of the brain that shows that they are harnessing their attention to learn something; to receive information. After they were fitted with the cap of electrodes they were seated in front of a computer which asked them a long series of very difficult questions; here is 'Who was the union general at the battle of Gettysburg?' The answer is 'Meade'. 'What's the capital of Australia?' which most Americans don't know 'Canberra'. Anyway, the student typed in an answer. A second-and-a-half later they found out whether their answer was right or wrong. And a second-and-a-half later they found out what the correct answer really was. When we looked at students who had endorsed a fixed mindset, they entered a strong state of attention to find out if they were right or wrong. But that was it; their job was done. They didn't care about what the right answer really was. But when we looked at students with a growth mindset, they entered a strong state of attention to find out if they are right or wrong, that's part of learning. But then they entered another very strong state of attention to find out what the correct answer really was. And they did this even when they had been correct. They wanted to elaborate upon their knowledge and learn more. Now, being psychologists, we didn't stop there. We gave them a surprise retest on the items they got wrong, and now we found that the students with the growth mindset got significantly higher scores, because they cared about learning.

And if you extrapolate that to real life you can think about it like this; people with a fixed mindset are going around saying "Am I right?" "Am I clever?" "Tell me how bright I am?" But people with a growth mindset are saying "Tell me when I am wrong, because I want to learn".

I'd like you know to take one or two minutes; turn to your neighbour and think about a time you were in a fixed mindset and chose to be a non-learner. Maybe you had had some setbacks and you were not feeling you had the courage to learn. Maybe you had just been promoted into a new position and

thought you had to have all the answers. Maybe you were in the presence of people who were judgmental and you were afraid to stretch. So think of a time you were in a fixed mindset and chose to be a non-learner, and then think about, what could you do differently next time? Let's just start that conversation that you can continue over the next few days.

Reflection

[break for audience to reflect on questions]

Okay, let's resume. And, in the meantime, the technology was repaired. Okay, to be continued. I hope this is the start of a long conversation.

Mindset Rule Number 2

Let's move now to rule number 2. And this rule is crucial; it's about effort. In a fixed mindset effort is a bad thing. Students in a fixed mindset believe if you really have ability then things should just come naturally. They believe that ... they say "To tell the truth, when I work hard at my school work it makes me feel like I am not very smart. So, what they are saying is, whenever they have to apply effort they feel stupid. They think if they were really clever it should just all come to them. But students in a growth mindset believe that working hard is the key. They say "The harder you work at something, the better you will be at it". They think that even geniuses have to work hard for their great discoveries. So, who's right? Do geniuses really work hard, or does it come naturally? Some of the most exciting work in all of psychology now is showing that there is one thing that distinguishes geniuses from their other talented peers, and that's how hard they have worked; how much practice they have put in to developing their skills? And not just building on their strengths, but addressing their weaknesses. Yes, they may be talented, but so were many other people and they are the ones that took their talent to the finish line.

I believe that the fixed mindset belief that effort is only for people who aren't clever is one of the worst beliefs students can have. It means that every time they meet a challenge and have to apply themselves, they are going to feel inadequate. They are going to do something only when it is coming easily. I believe this is why many of our brightest students stop working in school at some point. They have coasted along; everybody has told them how brilliant they are, and they come to equate low effort with being bright. At some point the low effort doesn't work any more; school becomes difficult, and they become anxious. They have a choice; should they work hard and feel stupid? Or should they retire while they are still a genius? Many of them choose to retire, and not push themselves; not feel the anxiety, so everyone will still think they are extremely clever but lazy. And they prefer that to testing out whether they are bright or not. Students in a growth mindset expect effort and enjoy effort.

Mindset Rule Number 3 - In the face of Setbacks

In the face of setbacks, hide your mistakes; conceal your deficiencies, because mistakes and deficiencies are permanent.

In a fixed mindset a failure means you just don't have it. And if you don't have it, you will never have it. But in a growth mindset mistakes are part of learning; deficiencies are part of being human, and so what you do there is you work harder; you find out what you can do to learn. And so, in our study of students making the transition to seventh grade; those with a fixed mindset after a disappointing score on an early exam in a course said "I'd spend less time on this subject from now on. I'd try not to take this subject ever again, and I would try to cheat on the next test". Look, if they did poorly and it reflects on their ability; they don't like effort, they don't believe in it. They are now tempted to take these circuitous routes to success. But in a growth mindset they say "I'd work harder in this class from now on. I'd spend more time studying for the tests, because continued effort is the way to grow that ability." In study after study, after study we have seen over and over that the fixed mindset gives students no recipe for recovering from failures. They give up and retreat to their comfort zone. They blame others for their failures, or they try to feel superior to someone else. I can't resist telling you about a recent study we did at my school, Stanford University, where the students are highly selected

and you would think they would be learners, but not all of them are. We brought them into our lab one at a time; we gave them a very, very, very difficult test on which they did poorly. And then we said, we have some tests of other students that you can look at before you perform again, and would you like to look at students who did much worse than you, or students who did much better than you?. And what we found was that students in a fixed mindset overwhelmingly said they wanted to look at the exams of students who did worse than they did. And afterwards they said “I really feel good about my abilities. I really feel I am on top of this material”. But, mark my words; we made sure there was no useful information in those exams. Whereas the students with a growth mindset overwhelmingly chose to look at the exams of those who had done substantially better than they had, so they could learn.

Where do mindsets come from?

Do you know that we are communicating mindsets to our students all day, in all the things we say? Our language tells students what we believe and what we value.

We started this research at the height of the self esteem movement. This is research on praise, where the self esteem gurus were telling American teachers and parents that they would create confident learners if they just praised children’s talents and abilities as much as possible. And we found that parents actually believed this. Eighty-five per cent of parents, when we polled them, said that you must praise your child’s ability, so that they will have confidence and be motivated to learn. But we kind of scratched our heads and thought “Wait a minute, we’ve been looking at vulnerable and resilient children, and it’s the vulnerable students who are too focussed on how intelligent or talented they are. And they are afraid to do anything that might make them look less intelligent, or less talented. Maybe praising intelligence would encourage fixed mindset, and maybe it’s telling students “That’s what I value in you, so you’d better be clever”.

Well, the great thing about research is you can have these questions and then you can put them to the test, and that’s what we did. We brought adolescent students; fifth graders, one at a time into a testing room. We gave them a set of ten problems like this from a non-verbal IQ test. And then each student got one form of praise. Some students were praised for their intelligence. We said after the ten problems “Wow, that’s a really good score. You must be smart at this” ... you would say clever ... at this. Other children got effort praise; it doesn’t have to be effort, any kind of process praise that focuses on the process that the student engaged in. And here we said “Wow that’s a really good score. You must have tried really hard”. What happened? Indeed we found that praising students’ intelligence made them believe in a fixed mindset more than praising their effort.

The second thing that happened is we asked them what they wanted to work on next, and we saw that just after this one sentence of praise the students praised for intelligence had become non-learners. They wanted to work on a task they were sure that they wouldn’t make mistakes on. They wanted to keep on looking clever. But the students who had been praised for effort were overwhelmingly learners. In some of our studies ninety per cent of them wanted a very difficult task where they might get confused, make mistakes, but they would stretch themselves and learn important new things.

Later we gave everyone very difficult problems to work on, and what we saw was that the students praised for intelligence lost their confidence. They thought, well, if success meant I was clever, failure must mean I am not. They lost their confidence; they lost their enjoyment of the task and they became less engaged with it. But, the students who were praised for their effort kept their confidence. They saw that the problems were harder; they knew that hard work could hone their abilities, so they remained confident, they remained interested and they were highly engaged.

I forgot to mention, our results were so striking, we did the study over five times; in different parts of the country; in cities in rural areas, and we kept getting the same results. So, what happened to their performance?

We now gave everybody a third set of problems that were matched in difficulty to that first set, and look what we found; the red line represents the students praised for their effort; they showed a remarkable increase in their performance on this IQ test from the first to the third trial. They remained

confident and engaged and they learned. They tried strategies during the hard problems and they learned new and better strategies. But look what happened to the students who were praised for their intelligence; they showed a marked decline in their performance from the first to the third trial; they got worse on this IQ test. Because they lost faith in their ability, they became disengaged from the task. The other line is a control group that was told “Wow, that’s a really good score”.

Now the story doesn’t end there. We said to the students “You know, we are going to do this research in another school, and we bet the kids there would love to hear about your experience”. We gave them a piece of paper, we said don’t write your name on it; just write about your experience. But we left a little space for them to report their scores. What did we find? Almost forty per cent of the students praised for intelligence lied. They lied about their score, and only in one direction; up. Now what does this mean? It means that in a fixed mindset you are so invested in being clever; your ego is so wrapped up in your score. They could not even anonymously admit to someone they would never meet that they did poorly on a certain set of problems. I don’t think that’s how we want our children going around their lives. Being so humiliated by a rough patch that they can’t even admit it to themselves.

What to Praise

So, here is a summary of good praise; what to praise if we want to praise children and build their confidence. You see the self esteem movement led us to believe wrongly that we could hand students self esteem on a silver platter by praising their intelligence, but you can’t. What you can do is give them the tools to become confident learners. To take on challenges; to enjoy effort; to bounce back from setbacks and they will build their own confidence and self esteem by knowing how to be so challenge seeking and resilient. So praise the effort, struggle. Someone said to me recently “In your culture, struggle is a bad word”. And it’s true, we never say “Oh I had a fantastic struggle today”, but we should. Everything we value; those are things we should be happy to struggle for, and I think we do our students a service if we do say to them “That was a phenomenal struggle”. It teaches them that effort is valuable and important and it’s the thing that we admire. Praise persistence in the face of setbacks “Wow, you really ... that was hard and it didn’t stop you. That’s fantastic”. Their strategies; they tried a lot of strategies on a maths problem; or their choices if they draw a lovely picture, how did they make these choices “Tell us about these colours”. Choosing challenges ... and “Wow, you chose a really hard one, that’s fantastic, you are going to learn a lot from that”.

Focussing on learning and improving, that’s showing ... sending the message in our language that that’s what we value. But I want to give a couple of more outrageous examples. Now yesterday, you probably thought “Gee, when someone gets an A without really trying they are really smart at that, and you might have said to students “You got an A without working, you are really good at maths” ... we say ‘math’, you say ‘maths’ ... “You did that so quickly and easily that’s impressive”. But notice what we are saying; we are saying you are clever when you don’t have to work at something and it comes right away. So, tomorrow this is what we should say “You got an A without working, you must not be learning much”. Well, you know, you could say “An A is good, but you must not be learning much”. “You did that so quickly and easily, oh, I’m sorry I wasted your time, let’s do something you can learn from” or “Oh, that’s too easy, that’s no fun. Let’s do something hard, lets do something fun”. Children pick up those values so quickly and they will say, and in a short time “I want to do something hard that’s fun”.

Let’s take one more moment for reflection now, turn to your neighbour. Based on this idea that language and praise communicate so forcefully what we value and what our students value, what is one thing you could do differently in your interactions with your students or your staff, to foster a growth mindset? What is something you could do on Monday? So, let’s take a minute or two and begin that discussion.

Reflection

[Break for audience to reflect on questions]

Okay, also to be continued. I hope you have these conversations in your schools. I hope you have these conversations with parents, because it’s really nice to have parents on our sides, and praising in

the right way. And believe it or not, parents can learn. Although, interestingly it is very hard to parents often to give up praising intelligence; they feel its part of what defines them as a good parent. So, they need some pep talks.

Based on our finding over and over that a growth mindset was really making students confident, resilient learners, we wondered if we could teach a growth mindset to students, and whether this would create changes in their motivation and their achievement. So, in our first study here, we created two workshops; the growth mindset workshop was eight sessions, it taught students some terrific study skills, and also the growth mindset. But the control group just got eight sessions of study skills. They were fantastic study skills; they loved them they learned them, but we thought, you know, they may not put them into practice without the motivation that comes from the growth mindset.

The growth mindset sessions, for the growth mindset group, were kicked off with this article ‘You can grow your intelligence. New research shows the brain can be developed like a muscle’. They learned that the brain was kind of like a muscle; the more you used it the stronger it got, and they learned that every time they stretched themselves to learn something new the neurons in their brain formed new connections, and that over time they got more intelligent. The students were galvanised to learn that the growth of their minds was in a large part in their hands. And we will never forget one boy in the growth mindset workshop, he was the bane of our existence; he never sat still, he was always creating mischief with his friends. But when we began reading this article together he sat down, he chased his friends away, he looked up, we thought maybe with tears in his eyes, and he said “You mean I don’t have to be dumb?” and a fire was lit under that boy and many, many others, who learned that they can actually change their brains through their own efforts.

And what we found ... the red line is the control group that got the study skills. They had been showing declining grades before the study; both groups had been showing declining grades in maths before the study. The control group, despite the study skills, continued to show declining grades. But the group that got the growth mindset showed a sharp rebound in their grades. Also, we asked the teachers if they saw any differences in their students’ motivation. They didn’t know which students were attending which workshop, and yet they singled out three times as many students in the growth mindset workshop to say that they had shown striking changes in their motivation to learn. Kids who often didn’t do their homework were doing their homework. Some of them, including the boy I mentioned earlier, were bringing in their homework early so they could get feedback. They asked to study with the teacher before exams, and so on. So, they really became galvanised to learn.

More recently we have created a computer based growth mindset workshop called ‘Brainology’. It has five computer modules and the teachers guide. Again, it teaches students ... it’s an owners manual for the brain ... and it teaches them what they can do to make their brain work better. It also teaches them the growth mindset lesson of how their neurons form new connections when they learn. Here are the two main characters of Brainology. They are guided through the programme by the talking brain orb, and they visit a state of the art brain lab.; they meet the mad scientist; they do experiments on the brain here, they click on different sites to see which functions are localised there. Here they click on nerve endings to see how new connections are formed. We tested Brainology out in twenty New York City schools, and the students at the end unanimously said they had profited from the Brainology; and this was anonymous, they just used their codenames. And they talked how they changed the way they learned and thought about learning. I picked out a few quotes because, to me, the most interesting thing was how motivating it was for them to think that everything they were doing was affecting their brain. So ... and how motivating that image is, of making new connections. So, this first girl said “My favourite thing from Brainology is the neurons part where when you learn something there are connections and they keep growing. I always picture them when I am in school”. Another said “Yes, I imagine neurons making connections in my brain and I feel like I am learning something”. Other kids said “Every time I think of not studying, I think no, my brain won’t form new connections”.

Conclusion

To conclude, a growth mindset allows students to embrace learning and growth and not worry all the time, will they make mistakes, will they look clever? It allows them to understand the role of effort in creating talent and intelligence, and it dispels the idea that if you have talent or intelligence you

wouldn't need effort. And it allows them to maintain their confidence and effectiveness in the face of challenges and setbacks. We don't hand students confidence, we teach them to confront challenges and setbacks through a growth mindset and it allows them to maintain their confidence and effectiveness. And maybe the best thing about a growth mindset is it can be taught.

But I also want to sound one final note about educators; we need growth mindsets too. In this changing and challenging age, we have got to be constantly learning and improving. And educators too, teachers, need permission to learn and make mistakes as they stretch themselves, as do their students, because if we don't have permission to learn; if we don't fulfil our potential, how can we make sure that our students fulfil their potential?

Thank you so much. Thank you.