

To become a nation of Nobel Prize winners you have to practise thinking differently!

Why is it that some countries or cultures have managed to get a lot of Nobel Prize winners while others have got very few or none at all? That is a question that I being from Sweden, the nation of Alfred Nobel, have received from a number of people in different countries, also a couple of times from people in China.

My answer is that there are basic differences between countries and cultures when it comes to education and equality, to authority and the upbringing of children and to creativity.

Let me give an example. One of my friends in Israel was for some years involved in training future teachers. In his class he had both Jewish and Palestinian students and he soon noticed a difference between them when they were asked a question that required some thinking and reasoning. Among the Jewish students each one gave his or her personal answer or comment, and each one tried to come up with something new that the previous speakers had not mentioned. The Palestinians, on the other hand, showed a different pattern. If anyone of them gave an answer or comment that got the approval from the teacher the others just repeated what the first one had said, presuming that the first student had come up with the expected and "correct" answer.

This is an example of two cultures with different attitudes towards creativity and freethinking. One where children from very young ages in general are expected to think for themselves, to reason and argue, and another where most children are taught to think according to how parents, teachers, religious leaders or other authorities think.

There is a huge difference between on the one hand just thinking as the elders think and on the other hand basing your own thinking in respect for what elder generations have thought. In the latter case you hold the intellectual heritage in honour by developing it further. After all, in Jewish communities there are a strong sense of belonging to an old and rich culture and that does not prevent people from thinking for themselves and being creative! (However, also in Israel students in sekular schools perform more creative thinking than students in religious schools.)

If you are taught to just repeat ideas and knowledge, then you will have difficulties creating new knowledge and new understandings. It has of course always been like this, but today in our global world and with the fast development of technology etc, such tradition is devastating. It means that such a nation will be dependent on the creativity and innovations of other countries.

And there will be no Nobel Prize winners.

It will also mean that people will have difficulties getting advanced jobs. In the world today, when a lot of the knowledge that is taught in schools will be out of date within a few years, the most important skill to learn in schools is the skill of thinking – for example to think differently from what your parents and grandparents thought.

This being so, what needs to be done by those nations where there is a serious deficit of creativity and freethinking?

There has to be a change in traditions and the intellectual climate – which of course is easier said than

done. Short-term measures have to focus especially on hierarchical structures and traditions in companies, institutions and organisations, while long-term steps have to focus on the school system and also on the influence from parents and grandparents. In its essence it is about making the society intellectually more equal, regardless of rank, sex gender or age.

Of course, there are families, schools and working places in traditional societies where creativity flourish, and there are groups and communities in more modern societies where creativity is suppressed – also for example in Israel – but what is the general intellectual climate in the society?

What about hierarchical structures and traditions?

Many companies, institutions and organisations around the world have very strict hierarchies that limits the potentials to change and develop. Hierarchies in itself are not necessarily bad, but when subordinates for example are not invited – or even forbidden – to present suggestions and ideas to their superiors then those organisations have a real problem. If a company in our competitive world fail to use all available resources, then that company need a lot of luck in order to survive.

Warning signals to watch out for are inflexible ways of working, mania for titles, women on subordinate positions only, disdain for manual work, employees who do not know the visions and strategic goals of the company, complicated and formal ways for subordinates to make contact with managers, teams that can not work together, silent employees, inability to be self-critical or accept criticism...

What seems to be the most difficult for leaders of all kinds all over the world is to accept criticism from subordinates. That is a risky situation for any organization, which by that lose the potential resource the critics make. Instead critics should be used as precious assets in the continuous development of the organization.

Parents – and grandparents – need to trust their authority without being authoritarians...

Hierarchical structures and traditions are common also in families. However, it is a sign of weakness, when parents do not trust their ability to be good examples for their children without having to act as authoritarians who always, without questioning, must be obeyed. The same counts for grandparents, who in countries like China play an extremely important role for taking care of their grandchildren.

If you want to create a culture of creativity and freethinking you need parents who from the very first start encourage and stimulate their children to be curious, to question, to be adventurous, to think differently...

The crucial challenge for parents is to transform their theoretical understandings about what is needed to support their children into practice when for example the family every day gather together around the table to have breakfast.

In China I have visited several community colleges or study centres where a lot of elder people learn and develop their skills in painting, calligraphy, singing and many other subjects. However, I have not yet seen any study group on how to bring up and stimulate children to become confident, curious, intelligent, open-minded, brave, creative...!

However, "thinking differently" does not mean an intellectual "anarchy", where you are alone in your thinking. On the contrary, the more knowledge, experience and ideas you get from your parents, grandparents and others the more creative can you be. It is the same in school; creativity can flourish

only when you have a stable and broad foundation of knowledge. And creativity will flourish most freely in groups characterized by open-minded thinking, tolerance, curiosity, willingness to share etc.

Do not be a slave under old knowledge...

However, you should not be a slave under old knowledge if you want to be creative. You need to use such knowledge but not to be ruled by it. Being ruled by established knowledge can even be dangerous, as this example from world war two shows:

During that war there were two persons at the American airforce who were recruiting pilots for big bombers. One of them was a psychologist, who was conventional, and the other a retired general who used his own unortodox methods. An evaluation found that many of those pilots that were chosen by the psychologist had been shot down by the Germans. Those pilots who were recruited by the unortodox general managed on the other hand to survive much more.

Both the psychologist and the general asked the candidates what they would do if their bomber was shot at by German anti-aircraft. The psychologist approved those who answered according to the instruction book, that they would ascend with their bombers, while he disapproved those who answered that they did not know what to do. The general, however, approved those who answered that they did not know what to do while those who answered according to the instruction book failed.

The conclusion was that those who did not blindly follow the instruction book were more creative during moments of danger and therefore had better chances to survive.

The first years are the most crucial...

Parents and grandparents are especially important because the first years, from birth up to about five years old, are the most crucial when it comes to optimal brain development. What is done during those years to stimulate the skills among your children or grandchildren can hardly be overrated. Consequently, education and training of preschool teachers is of outmost importance.

Probably the single most important understanding every teacher – and every parent and grandparent – have to embrace is the crucial role motivation plays; without motivation there will be no creativity and no innovations. However, there are two types of motivation, extrinsic (outer) and intrinsic (inner). Extrinsic motivation comes from outside the person and could be either positive (some kind of reward) or negative (some kind of punishment). Intrinsic motivation comes from inside the person: curiosity, interest, passion...

A lot of studies show that intrinsic, inner, motivation is far more essential for creativity, while extrinsic motivation even could be counterproductive. Extrinsic motivations can easily distract from the actual goals and instead make people focus on the rewards or punishments. Extrinsic motivations can also reduce the willingness to take risks since risk-taking might endanger the expected rewards.

And without risk-takings there will hardly be any audacious creativity...

Schools

Most schools all over the world focus mainly on convergent thinking, that is to think like everybody else or as the authorities. Albert Einstein was for example very critical and said: "It's amazing that our

educational system doesn't destroy all curiosity". He was talking about schools in Europe and US, that is schools which mostly are comparatively liberal. It is even worse with schools in countries and communities which are dominated by convergent thinking, religiously or politically.

In order to promote creativity schools and teachers have to give priority to freethinking over repeating and dogma. Teachers have to help their pupils and students to cultivate their natural curiosity.

Teachers must be convinced that every student has the potential to be creative and the teachers have to know how to promote creativity and – even more important – what not to do. It is necessary to create good conditions for students to talk about what they are studying, to discuss, reason, reflect together etc. For example, discussions can not take place only in big classes. Instead, now and then during the day, big classes have to be split up into small groups to make it possible for every single student to be active in discussions every single day in school.

However, teachers must never lose sight of the importance of knowledge and skills. Students can only have serious discussions and be truly creative when they have well-founded basis of broad knowledge and skills – deeply rooted in their own culture.

Creating a school system where creativity and freethinking can flourish requires a series of measures:

- Teacher training must be reformed. First of all, education has to be learner-centred and the role of the teacher has to be shifted from the source of knowledge, whose authority cannot be challenged, to the facilitator of more independent learning.
- Teachers in schools need to get further training through courses, seminars and study circles according to the new teacher training. Teachers need for example to learn how to promote and stimulate creativity and how not to hamper their students.
- Teachers should be masters in creating good conditions for group work, where creativity can flourish in the meeting of various ideas, experiences, attitudes etc... By the way, group work is something that is needed in every modern company nowadays.
- Teachers need to be independent of textbooks, so they can use them creatively and with a lot of flexibility. Often other resources are more useful, such as ordinary books, newspapers, journals, Internet etc.

Above all, schools and teachers need to be very clear about their ultimate aim. Is it to teach the students to do what their teachers want them to do or is it to prepare them for a future about which schools and teachers have very vague ideas and practically no knowledge?

I have visited several schools in China and it is common with appeals on the walls such as "Study hard make progress everyday". I wonder when I will see a slogan like "Think differently!"...

Examination system

However, no matter what will be done in schools in order to promote creativity and freethinking, that will have little effect if the examination for higher education does not support these qualities. As long as there is a hard competition to higher education students will prepare themselves for such examinations. And if they only test the ability to remember and repeat then the students will only focus on such skills.

There are of course basic knowledge and skills that you need in order to get into higher education and in order to manage in society, such as skills in English. Any examination system must include such skills,

but besides from those what you have to learn is the skill to think and that has to be the main focus for any kind of instrument of selection.

By the way, there are a couple of disastrous side effects of a crucial examination system that only or mainly focus on repetitive knowledge. One is that all those who do not pass the examination test will finish school with very little that could be of use for their future life, because most of what they studied in school was targeted only on the examination to higher studies. What waste of time and resources!

Another negative side effect is that some of those truly creatively gifted students will not pass the examination test – simply because they find it too tedious to prepare for boring and unexciting tests and for that reason never make it into universities.

Combine examination with lottery?

If you want to promote creativity you need an examination system that not only test the student's ability to remember but also their ability to perform divergent thinking, that is not to think like everybody else or like the authorities. You also need a system which does not require the students to spend all their time preparing for the exam – when will they otherwise have time to develop all other skills that are necessary or important for them to become good citizens?

A possible alternative could be to create a selection system in two steps: examination plus lottery.

Step 1: Every student, who have passed upper secondary school, will be able to take part in an examination that tests basic knowledge and skills that are presumed to be necessary for higher education and more advanced studies: language and communication skills, English, logical thinking, the ability to perform divergent thinking etc... The examination should only test such basic knowledges and skills. After all, it is almost impossible to choose what other knowledge should be tested when noone actually knows the future value of such knowledge.

The test results in two groups only, those who pass the test and those who do not. If you pass you are qualified to apply for university studies.

Step 2: The application to specific courses at universities or university colleges. When there are more applicants than admission places, then the university arrange a lottery that results in "winners" and "losers".

Those who pass the test in step 1, but fail to enter the preferred university, because they drew a blank in the lottery, of course should have the possibility to try their luck at other universities or later.

With such a system there is only a certain amount of repetitive knowledge and skills that the students need to learn – enough to pass the examination in step 1. When the schools have taught those basic knowledge and skills, then there will be time for teachers and students to focus on quality, creativity, group work etc. Such a system will free the teachers from the pressure of only mediating already acknowledged knowledge so they instead can explore new possibilities and understandings together with their students and in that way be creative themselves.

And – as an extra bonus – such an education system would considerably increase the chances for gifted people to get Nobel Prizes...

What you can do yourself..

Parents, grandparents and schools are important but they are not as important as you yourself are in promoting your own creativity. My first and most important advice, if you want to boost your creativity, is to give up television. Television functions almost like drugs, it might make you believe you are creative and learning – but what it actually is doing is softening your brain. So, do not watch TV!

Instead read books! Different kinds of books. Choose interesting and exciting books and skip the boring ones. Take it as a challenge to try books about topics you have never thought about before.

If you have not done it yet, start exploring the vast resources of "podcasts" on Internet. There are countless numbers of exciting lectures, radio programmes, lessons etc for free, which you can download to your computer and to your iPod. Listen to them while you are walking and exercising your body, which by the way is good also for your brain...

That presumes you are curious and curiosity is maybe the most valuable quality among human beings. Remember how curious you were as a child; you do not have to be less curious just because you grow old. Remember, every human being has been able to observe that apples fall to the ground, but only Newton asked himself the obvious question "Why do apples fall...?"

Take it as a habit always to carry a notebook with you. Writing down your ideas and thoughts makes it much easier to remember them later – so much easier you probably seldom need to actually read what you wrote.

Exercise your brain in many different ways: Talk to people, different people, especially those who have other background, experiences and ideas than you. Take different routes when you walk to your school or your job. Use your left hand if you are right-handed and vice versa. Etc...

Discuss, read etc with an open mind. Of course, other people are probably less intelligent than you – but yet they might have got ideas and reached conclusions that are worth considering...