Published on *Up Close* (https://upclose.unimelb.edu.au)

#340: Giftedness: Identifying and handling gifted children in schools and at home

VOICEOVER
This is Up Close, the research talk show from the University of Melbourne, Australia.

LYNNE HAULTAIN
I'm Lynne Haultain, thanks for joining us. There's been discussion for many years in education and certainly amongst parents about giftedness. How to identify it, what to do if you have picked it, and what are in the impacts for children, parents, schools and their communities? But how do we define giftedness and does it vary depending on the cultural context?
Psychologist and educator, Dr John Munro is Head of Studies in Gifted Education and Exceptional Learning at the Melbourne Graduate School of Education. He has an abiding interest in this area and has looked closely at how education systems respond to gifted children. John, welcome.

JOHN MUNRO
Thank you Lynne.

LYNNE HAULTAIN
Well what is giftedness? It's been discussed by academics as I understand it for about 100 years, which is quite remarkable. How do you define it?

JOHN MUNRO
I would define giftedness and particularly gifted learning as a way of thinking. It's a way of thinking that actually leads to enhanced and unusual outcomes, knowledge outcomes, and procedural outcomes that are readily identifiable. When people are presented with information, generally people internalise or interpret that information. There are other people who take the information and do more with it. They're able to extract patterns from the information and link those ideas with other areas of knowledge, so they're able to infer, and they're also able then to link the inferred patterns into a big picture understanding of the topic that is quite different from the information that was presented initially.

LYNNE HAULTAIN
So is it extrapolation? Is it about context?

JOHN MUNRO
It is extrapolation and it's adding new knowledge through a process called fluid analogies. A gifted person is able to make links between the information that they've been presented with and other areas of their knowledge, often that are quite unique to them.

LYNNE HAULTAIN
We talk about gifted people who are gifted at art or music or maths, are people gifted in different ways or is there a similar kind of brain activity that is constant for all gifted people?

JOHN MUNRO
There are both similarities and differences. We think of gifted people generally as having this capacity to learn, capacity to learn in the ways that we just discussed, being able to go well beyond the information and to come up with creative, new ideas. Ideas that are linked together in terms of what is at one point an intuitive theory about the ideas. The theory may not be totally correct, it may not be totally logical, as Einstein's theory of relativity particularly in relation to Newtonian mechanics was.
Now as well, a person can apply that type of thinking to any domain in which human knowledge exists. People can apply it to music. So Schubert could actually envisage possibilities in his mind that other people at the time, other musicians, wouldn't have seen. Politicians can see possibilities that other politicians won't see. Artists can do the same.

LYNNE HAULTAIN
So are gifted people absolute outliers, or is there a spectrum?

JOHN MUNRO
Again, I think that's a really interesting question. I would argue that there is a spectrum. Since we are talking about people creating new knowledge, there are people who can do this in a bigger way, other people that can do it in a bigger way still. A key concept in any theory of learning is the thinking space. The thinking space is where the new ideas are linked together. People differ in the extent to which they can use their thinking spaces effectively, particularly in terms of what aspects of the knowledge they've already automatised. You automatise more knowledge you can think in a bigger way about that knowledge.

LYNNE HAULTAIN
What about the brain function? What's happening in gifted people's brains that might be different from normal brain function?

JOHN MUNRO
A series of research studies done initially in the 1990s, and then carried on through

the last one and a half decades, has compared the brain processing of people known to be gifted and those who aren't. When people who are not gifted are, for example, presented with a maths task, a particular neural circuit lights up in their left hemisphere. That neural circuit stimulates what the person knows about mathematics, their ability to think about that, in other words the prefrontal area, and also how well they're getting feedback about what they're doing as they?re using their knowledge during the task.
Now in gifted people, it's been shown simultaneously with that neural network lighting up, a corresponding network lighting up in the right hemisphere. Now this immediately delivers a much greater thinking space where we've now got a greater capacity to think about the ideas. But in addition to that, the right hemisphere has encoded the particular topic in quite different ways.
One way in which the left hemisphere differs from the right hemisphere is that the right hemisphere encodes the person's unique thinking about those ideas, whereas the left is more what you've learnt from your culture, what you've learnt in a maths context in the classroom. Another aspect of the right hemisphere processing is your ability to imagine ideas, visualise them, see them from multiple perspectives.
So, again, when Einstein was learning about Newtonian mechanics developed in the 16th century, he as well was stimulating related ideas in the right hemisphere. And this allowed him to actually see holes through imagery in the ideas that other scientists in the 1920s and 30s were happily accepting. So this bilateral stimulation as opposed to the unilateral, delivers these qualitatively different ways of knowing.
Now subsequent to the maths studies and one person who was doing this research was Michael O'Boyle, who was here at this University for three years, in addition to looking at maths learning, it's also been shown to exist with learning in other domains.

LYNNE HAULTAIN
But John, let's get to this core question: how much is nature and how much is nurture in giftedness because as you've described, there is this quite demonstratively different brain function, but how much of that is about genetics, and how much of that is about your environment? Because I should imagine both would have a part to play.

JOHN MUNRO
Yes, indeed Lynne, both do have a part to play. First of all, we know that many people who are gifted, also have gifted siblings. They may be gifted in different domains, but they certainly achieve these talented outcomes. Now a theory to explain the brain processing that we've just been talking about has recently been proposed that suggests that during the second and third trimester of fetal development, that for some mothers, there is an excess of testosterone in the uterus. That leads to the right hemisphere developing abnormally. So it's the right hemisphere development that in facts leads to the opportunity for the bilateral stimulation rather than the unilateral.
This theory was first proposed for dyslexia in the 1970s, the Geschwind-Galaburda theory accounting for a neurological basis or predisposition towards being dyslexic. It's interesting that a lot of people who are gifted are also dyslexic. There is a higher portion of dyslexia among people known to be gifted than in the regular population.

And this particular theoretical approach is actually continuing to be accepted more broadly.

LYNNE HAULTAIN
Is giftedness fundamentally a western construct, John? I mean is it something that generally developed nations can identify and develop? Because I should imagine we've got gifted people at all levels of society and all cultures. Whether or not they get identified, whether or not they have the opportunity to develop that potential is another question.

JOHN MUNRO
Over the 20th century, as giftedness has become more identified as a phenomenon, it certainly has been linked with Western, middle-class, cultural values. In Australia, we know that people have existed quite happily and successfully for 40,000 years at least. We know as well that over that time conditions changed.
There would have had to have been people regularly who were solving problems at a higher level, who were able to see possibilities that other people couldn?t. Whether or not those people were seen to comprise a separate group of people or not, we don't know. But we certainly know that within the Indigenous cultures in Australia, and we've seen this through the art, through the music, but also through the way in which the indigenous cultures have used the links between vegetation, the seasons, and their life, that they've been able to generate sets of ideas. They've been able to use their knowledge in very high level ways to allow the culture to continue and in fact to prosper.

LYNNE HAULTAIN
So are you saying that cultural survival is an indication that you have giftedness amongst you?

JOHN MUNRO
Yes, I'd be saying that the ability to adapt and to change really is an indicator of moving away from what a culture knows at this point, to what it might know in five or 10 years' time.

LYNNE HAULTAIN
So why do we need to identify it then? If these people are culturally embedded, that they offer us solutions to problems and progress our communities in their own ways, do we need to pluck them out?

JOHN MUNRO
Yes. It's critical that the culture in which these people live allow them to do that. It's very important that the culture doesn't say to them, as people did say to Einstein, no, you're wrong. It's very important that the culture is able to tolerate possibilities, tolerate at one point, multiple ways of thinking about an idea.

LYNNE HAULTAIN
I'm Lynne Haultain and in this episode of Up Close, I'm speaking with expert in

exceptional learning, John Munro, about gifted children. John, let's tell the story of an individual child. How young would you identify giftedness or could you?

JOHN MUNRO
Indicators of gifted thinking and learning have been identified in children as young as one and a half.

LYNNE HAULTAIN
Really? That young?

JOHN MUNRO
Yep. What are used here are developmental pathways that show the relative age at which you'd expect children to acquire particular milestones. This can be done in the area of language development and in terms of, at what age an infant acquires the ability to distinguish between nouns and adjectives, or nouns and verbs, and so on. It is also being done in the context of developmental play where parents, particularly mothers, interacting with their infants have engaged in symbolic play, play that involved solving problems. Some children have shown, developmentally, behaviours that were typical of say regular children who are a year older. So, on a developmental play checklist, the 18-month-old children are interacting at an age that is typical of much older children.

LYNNE HAULTAIN
But John what you're talking about there is the way in which they interact with other people, I assume. So how is that indicative of giftedness when we tend to think of giftedness as being about abstract thought?

JOHN MUNRO
Lynne, that's a really great question. The children were involved in problem solving activities, activities in which they needed to deal with the situation, perhaps that their mother had provided them with, or with a situation that they had set up and they had a go at solving it. We should remember that giftedness isn't only linked with abstract thinking.
We have many people in this world who are gifted nonverbally, who are gifted in imagery ways, who are able to construct unique and creative and complex models of the world, not through abstract thinking, but much more through imagery and creative thinking. In fact, it would be reasonable to say that Einstein wouldn't have generated the outcomes that he did if we were not able to engage in that imagery way of thinking.

LYNNE HAULTAIN
John, say we've got a four-year-old who is ticking all your boxes, she's behaving in an exceptional way, she's problem-solving in really creative ways with her peers, with her parents, what do we need to do in order to make the most of that potential?

JOHN MUNRO
First of all Lynne, we need to allow that person to continue to build their learning

capacity, their capacity to learn in that whole range of ways through exploring, examining their environment, generating hypotheses and possibilities, following them up and so on.
A second key aspect is that that person learn how to communicate her ideas with others. That she learn how to share ideas, respond to other people's ideas, and to develop what we might call a theory of mind, an awareness of other people and how other people will work with her. It's her awareness of herself in her world. And as well, she needs to learn how to allow herself to be programmed by her culture because it's critical that she not only be able to explore and develop thinking in a range of ways, but she also, in order to develop what might be seen as accepted outcomes in the future, in other words, talents. She needs to allow her culture to program her and to program her thinking.
So there is this element of synthesis that is necessary for those various aspects to come together and opportunities that allow her learning to develop in an open-ended way without reference to her culture will mean probably quite soon she'll have difficulty interacting with other people.

LYNNE HAULTAIN
Which nails a question that I think a lot of people will have, and I think many of us have been aware of young people who have been identified as gifted and felt marked, felt separated and felt alienated from their peer groups and from society in general and have really suffered. In fact, I'm aware of parents who do not want their child identified as gifted for fear of what that means to them socially. So what sort of impact is there potentially for the young person who is identified as gifted? Is it necessarily a good thing, or can it be a burden at times?

JOHN MUNRO
One key issue that arises frequently with gifted students is referred to as asynchronous development where particular parts of a person's knowledge overall develops much more rapidly than other parts. So the person isn't thinking in an integrated way, but appears quite bizarre in what it is that they do.
In those cases, it's not surprising that the person would feel alienated because often they are, often through the feedback that they're getting, and remember earlier we talked about that part of the brain that is all the time monitoring emotionally how well you're being responded to, how well you're being accepted. The feedback that you could be getting for your atypical ideas, particularly along the lines of, no, that's silly, you're stupid for thinking that, that's not right. When you see that your suggestions are not meshing with other peoples?, and that information is processed by your brain, you will feel alienated.
A key part of learning altogether is the balance between how easily you learn by being programmed externally, as opposed to being self-programming. Now most of us operate in the middle. We?re equally balance between me being programmed by others and me generating and motivating my own behaviours. Some gifted people are gifted because in fact they're much more self-motivated and they're more self-motivating. So they're creating much more than they're being programmed by their culture.
As a result, one key area of human activity that they don't learn well is how to interact

socially. We teach children grammar, we teach the maths, but beyond about Grade 1 or Grade 2, we don't teach any children how to interact socially. We don't help people learn how to read situations, how to plan how they might act in those situations, particularly if their ways of thinking are quite different from those of some of the others. So the idea of the person being alienated may in fact, from their perspective, be quite real.

LYNNE HAULTAIN
So giftedness is really challenging. Through all these developmental phases of growing up and wanting to be accepted by your peers, which is very intense at this age, your thinking process can either, together with your particular characteristics, make you a brave loner, or cause you to hide your light under a bushel.

JOHN MUNRO
Yes, and in the research, people talk about six gifted profiles. Neihart and Betts identified six profiles, one of which relates to some students, particularly in adolescence, wanting to mask the giftedness. Others, another category, is where the student, as I mentioned earlier, becomes quite alienated from the learning situation. So two of the profiles really do involve really severe social interaction problems and issues.

LYNNE HAULTAIN
Let's talk about the people who identify gifted people, and generally that's I suppose parents and teachers in the first instance. Their motivations and their agenders can also play out in this context, can't they? I mean teachers have considerable power and some may have less than pure agendas when it comes to who?s gifted and who is not. I'm thinking of the stereotypes that some teachers may have in their own minds about who is gifted and who's not. I think there has been some clear research showing that kids from culturally and linguistic diverse backgrounds are systemically under-recorded or under-identified as gifted. Is that the case?

JOHN MUNRO
As a teacher, I have a metaphor about how students in my class will learn. I might believe that all of the children will learn by me providing them with the good oil, the good information and they internalise that. And when those children display responses to me, those who have learnt them really accurately, and really fast, I might categorise as being high achievers. It might be that when a student gives me a response that is left field, over the horizon, out of the box, I don't recognise it as such. I see it as possibly a distraction. I might say to the child, okay, we'll deal with that later, or let's get back on task, or it might be I?ll say to the child, no look you're wrong here, and let me tell you what the correct answer is.
As teachers, we operate totally on the metaphors that we have. We have to in classrooms. A teacher who can listen to a child's response and when the Grade 4 child tells you in terms of talking about the solar system that the moon is moving closer to the Earth, instead of saying you're wrong, or listen and I?ll tell you again, you ask the child, why do you think that? The child then unpacks for you their theory. They draw a diagram on the whiteboard that shows that when the moon is

between the Earth and the Sun, it's been pulled in opposite directions. When the moon is behind the Earth, and it's being pulled towards the Sun and the Earth in the same direction, you might expect it to move closer. If I as the teacher know to look for that, I'm more likely to see it.

LYNNE HAULTAIN
That's a beautiful gravity theory. I like it.

JOHN MUNRO
It was given to me by a Grade 4 child in a class that I was teaching. It would have been possible for me at the time, my having taught physics since 1966, to actually say to the student, you're wrong. What I was able to do was allow the student to actually explore the idea. I selected some short texts and he was two days later, able to feedback to the class as a whole what his thinking now was. And in fact, there was an issue to do with the moon moving closer and further away. He was able to convey that very effectively.
As teachers, we haven't had the opportunity to learn a lot about multiple ways of understanding topics. A lot of teachers assume that all children will internalise the ideas in much the way that I teach them and we believe that because that's why we teach what we say because we believe that all the children will internalise those. The gifted students don't. They go further.

LYNNE HAULTAIN
So they're challenging for teachers.

JOHN MUNRO
They are wonderfully challenging for teachers. And if I as a teacher know how to follow-up over the next 10 or 20 seconds and have the child unpack their intuitive theory, all of us in that class learn from it. We all learn from it. Could I give you one other example?

LYNNE HAULTAIN
Please.

JOHN MUNRO
I was teaching a Year 8 class about digestion. We'd got as far as the stomach, and whenever I teach a group of kids, I say, did anyone think of anything that I didn't mention? One child asked the question, how do the glands in the wall of your stomach know how much acid to squirt out to break down the food? I had no idea. I had no idea at all. I was standing at the white board and for everyone to see, I started to draw the child's theory. The child went on and said, yesterday I had a Big Mac. There's more starch in that than the salad I had today for lunch. How do the glands in the wall of the stomach know? Do the eyes somehow assess the food? Or are there indicators in the stomach? We left the diagram on the whiteboard. We generated as a group a whole lot of questions. No one else in the class would have thought of it. But when that idea was brought to the classroom table, people could all deal with it, particularly in terms of my diagram on the whiteboard.

I was at the school on the next occasion that class was learning digestion to continue on with the lesson. Two other students in the meantime had pursued it on the Internet and came back with possibilities. It would have been so easy for me to have said to the student on the first occasion, look, that's not part of our course, you'll learn that in Year 11.

LYNNE HAULTAIN
But you didn?t thankfully. Did that child identify as gifted?

JOHN MUNRO
Yes. That child was known to be thinking differently. It actually did prompt the teacher to follow-up. This is a really good point, because in terms of identification, in the school situation or in the home, or in the child's interaction with others, they are often triggers that cause you to suspect that someone might be gifted. Often, schools and sometimes the family are not good at responding to those triggers and we need to be very sensitive to that because nothing else will happen if in fact the trigger is ignored.

LYNNE HAULTAIN
You're listening to Up Close. Today, we're exploring the identification of gifted children and how we make the most of their potential. With us is psychologist and educator, John Munro. John, have we any idea of what percentage of the community is gifted, right at the beginning, before nurture gets in the way?

JOHN MUNRO
Lynne, people really differ in the statistical cut-off point for where giftedness begins if you like. Some people claim that it will be displayed by the top 10 per cent of the population, some by the top one per cent, and so on. I don't think there is a lot of gain or mileage in that particular approach. I think much more importantly we need to look at the quality of a person's understanding given that they, along with other people, have been presented with the same information. Someone who can take the information and do much more with it in terms of elaborated, extended, and differentiated knowledge, I would say would be more gifted. So I'm wanting to argue much more for a qualitative perspective on looking at giftedness.

LYNNE HAULTAIN
Let's revert to Einstein whom you've mentioned a couple of times, as just a character who had some challenges in his early life in terms of recognition of his genius.

JOHN MUNRO
Yes.

LYNNE HAULTAIN
But he overcame those, and is globally renowned, and has delivered some critical new knowledge for humanity. Do people tend to think giftedness will out. That if you're really gifted, you're going to make it from anywhere. Therefore, there is no great need to invest so much in the identification and the development of that

potential.

JOHN MUNRO
I'm not sure whether teachers believe in the ?will out? theory. I was talking with one of my PhD students earlier today. We were looking at data he'd collected about an individual child. His attention was drawn to this child because he'd given the class a spatial reasoning test and he'd finished early. He asked one or two other questions of my colleague about the test. At the same time, he was drawing a portrait of my colleague. His regular teacher said to my colleague, what did he ask you? My colleague told her and she said, he is one of the low achievers in the class. When we looked at his assessment, he in fact verbally was at the 37th percentile, which is low average verbally. Nonverbally, he was at the 99th percentile.
Another task we did with the class that this child was in was before the children learnt a particular topic, we gave them a list of 15 concepts that were going to be mentioned in that topic. We said to the children beforehand, organise them in the way that you think they will be for that topic. The topic was about energy in everyday life. This particular student, when we analysed his results, showed a very high level of organising the key concepts.
What we found in our research was that the children who were not gifted tended to link the concepts in a linear way, whereas the children who were much higher level thinking tended to organise the ideas in a hierarchical way. This boy had really clear hierarchies in his knowledge. A second thing that we looked at whether he brought in new ideas, and he had. He'd linked in ideas that some of the other students hadn't. So from the perspective of his teacher, he was seen as a low achiever, but in fact from the perspective of his thinking, he was thinking at a very high level. Now when we discussed the data with his teacher, she then started to see other examples of where he'd given unusual responses. But until we mentioned that, he was being seen as being a low achiever.

LYNNE HAULTAIN
John, so much of it is about all those experiences along the way. It's a bit of a lottery in the end isn't it?

JOHN MUNRO
A very important concept in the analysis and understanding of giftedness is the lottery issue. We talk about chance. We talk about risk. We talk about whether or not a child will get access to a teacher who does understand gifted learning. We talk about a child having access to the opportunity to visit a library that will have the resources that they need. That these days, that they'll have access to the Internet that's going to provide them with a rich set of ideas. That they'll have access to a peer group that doesn't say, that?s stupid and you're a nerd thinking it, but hey let's think about that further. Access to parents who will allow their children to follow and make their own trajectory, to actually fly and to value the knowledge that they're gaining. And it's also important that they have access to people who will say to them, I don't know the answer to that, but I'd be really keen to hear your further exploration of it.

LYNNE HAULTAIN
If you're identified as a gifted child, is the pressure on to then turn into a major contributor and another Einstein?

JOHN MUNRO
The pressure might be on, but in five minutes time, someone might be saying to you, and I'll support you to do it. That's going to be different from the pressure being on and there being no support. The pressure being on you, okay, you're gifted now and this is what we expect from you, or you're gifted now and these are some of the possibilities that you might realise and we're going to be supporting that and helping you move through that.

LYNNE HAULTAIN
So what happens in adulthood John, because I'm aware of a 90-year-old who is back at university and for the first time in 60 years, has the freedom to think outside the constraints in which he has lived for that period of time as a professional person in the community. Seems to me that he's perhaps accessing parts of his creativity and potentially what was latent giftedness at a very mature age. Is that possible?

JOHN MUNRO
Yes. I believe it is Lynne. I really do. Many people believe that as you grow older, your knowledge becomes more restrained, it's more restricted. Whilst you're learning more, it's harder to actually step outside of the mould of that knowledge. We also know that a key aspect of knowing and thinking is what your prefrontal allows you to do, what your metacognition allows you to do. A 90-year-old who in fact is able to stimulate both hemispheres in terms of the prefrontal, and who can see thinking possibilities that actually lie outside of their existing knowledge base, are going to be able to be creative. They're going to be able to be creative in ways that a 30-year-old probably can't be because the 30-year-old doesn?t have that whole bank of experiences of life as well as the rich abstract knowledge that you were talking about that allows them to think in those ways.

LYNNE HAULTAIN
So John, there's hope for us yet.

JOHN MUNRO
I sincerely hope so Lynne.

LYNNE HAULTAIN
We've been talking about giftedness in children and what becomes of them as adults with psychologist and educator, John Munro, from the Melbourne Graduate School of Education. He's worked with the Aga Khan Foundation on identifying gifted young people in Asia and Africa, and is the author of a number of papers including: Teaching gifted students: A knowing and thinking based framework for differentiation. You'll find details of this and some of his other publications on the Up Close website together with a full transcript of this and all our other programs.
Up Close is a production of the University of Melbourne, Australia, created by Eric

van Bemmel and Kelvin Param. This episode was recorded on the 24 March 2015 and was produced by Eric van Bemmel with the audio engineering by Gavin Nebauer. I'm Lynne Haultain, thanks for listening and I hope you can join us again soon.

VOICEOVER
You've been listening to Up Close. For more information, visit upclose.unimelb.edu.au. You can also find us on Twitter and Facebook. Copyright 2015, the University of Melbourne.
