Barbara Arrowsmith Speaks with LearnFast

The Complete Interview

Sydney, Australia

Peter Barnes
LearnFast Australia

During her speaking tour of Australia & New Zealand in June 2014 Barbara Arrowsmith –Young , founder of the Arrowsmith School spoke with Peter Barnes from LearnFast.

Barbara was very generous with her time and gave us a lot of useful, interesting information and many insights into her work.

Transcript of the Interview

Interviewer (Peter Barnes): Can we start off with just getting a bit of a feel for the composition of the people who come onto your programs - adult versus adolescent versus primary age kids; and the specific difficulties they're presenting with. Can you talk to us about that?

Barbara: Sure. I work across a really broad age range. Some as young as age five, and the oldest person who has been through the program was 81.

And to me it was exciting as there is neuroplasticity and the capacity of the brain to change across the whole lifespan. So if there is a learning difficulty, it's never too late to address it and we're certainly really passionate about addressing it very early before all of the emotional and self-esteem and mental health issues kick in.

In terms of the individuals who I've worked with, it's a wide range of what North America calls learning disability, and here they seem to be using the term more specific learning difficulty but it's the same individual.

It’s the individual who has cognitive functioning in some areas that's working well. Their broad range of overall intellectual functioning is within the average range. But within that they could have very significant deficits. So you see this contrast in their functioning where there's certain things they're very capable in, other things they're incapable of.

I'd say to the parents who ask, “How do I know if my child's appropriate?” I'd say, just look at their functioning and if you see they can excel in this aspect of learning and then they hit a wall in this aspect of learning. Probably that's an indication of what I call a cognitive deficit or learning disability.

Cognitive deficit, not learning disability

I like the term cognitive deficit better than a learning disability because, to me, cognitive deficit is, you're looking at a component. You're not looking at an overall description.

It's like a component that just needs to be tweaked or worked.

Motor Planning

For example, there's a child who can't learn motor plans. This is a child you can talk to, who can be incredibly articulate. They can tell you a beautiful story. If you put a pencil or a pen in their hand and ask them to put that story on paper, they do only one or two sentences.

They've got the auditory content, they've got the thought structure, but they can't translate it into the motor planning, into the written process.

This is a student who, traditionally in school, you want to give them lots of time because they're really slow to express themselves in writing. It's the child who will make written errors, a child who will struggle with learning how to spell, not because they can't hold the look of the word but when they go to write it, it just doesn't fire out in the motor plans. So they have to think about the letter formation.

So that's one area.

Eye tracking in reading

There is an area that affects eye tracking in reading. Not just the writing process but it's the motor plans that the eye learns to track symbols and print. So this will be the child who, as they're reading, might have to use their finger or ruler to guide the eye. If they don't, they'll lose their place in the reading, and their reading speed will be slow.

So that's another cognitive function.

Following instructions

We also work with individuals who have various aspects of auditory memory - the child who can't hold instructions. This is the child who the parent will tell to do three things and then the parent walks away. When the parent comes back, the child has done only one and they don't even remember that there were two other things they were supposed to do.

So often that child will get labelled as irresponsible because they're not carrying out the instructions they're being given. They truly aren't irresponsible. They just can't hold all the auditory information.

I've worked with adults who have this problem and they've got post-it notes all up around their house or to-do lists. If they lose their to-do list, they're lost because they need to see it visually. They can't hold it auditorily.

This will be a person who wouldn't like books on tape because the auditory world isn't where they copy information or learn information. So this would also be the individual in a lecture who might have to use a tape recorder to tape the lecture because they'll walk out and they won't remember the detailed information.

Numeracy

There are people who struggle with numeracy, what one researcher calls quantity blindness. And it's where, for them, ten, a hundred, a thousand, all means the same thing. Like they don't really have a sense of magnitude or quantity.

So this is a person as an adult, they can't budget. I've had adults who when they get their pay cheque, they have to have an envelope that says, this is "Rent," this is "Food," this is "Clothes." And they have to cash their cheque and they know, "I have to put this amount in here, this amount in here, this amount in here," each week because they know if they don't, at the end of the month they'll have no money.

And they're not irresponsible, they just have no concept of where the money went or they can't time schedule.

I worked with a psychiatrist who had this problem and she used to double-book clients, not because she wanted to double-book them. She just didn't have a sense of the timing, and she couldn't balance her cheque book. We worked on the problem, and now her clients are happy because she's not double-booking. And she can balance her cheque book so her bank manager's happy, too. She's not in overdraft.

Time signature in music

I have worked with people on areas related to time signature in music. I've had some musicians who have struggled. They've been good in other areas but they have difficulty, they have problems with timing in music.

There's a person who runs out of gas on the highway because they can't imagine how much gas they need to go a certain distance. So that's all one function.

Do younger or older people make the fastest progress?

Interviewer: From your experience working with adults and children, do you find any difference in their speed of progress? Do younger children and adolescents make faster improvement than adults?

Barbara: It's really interesting. When I first started this work, I thought children were going to make much faster progress because there was this research coming out a bunch of years ago talking about this wonderful window of neuroplasticity that starts to close at age 10 or 11. I didn't see that in the population who I was working with.

I saw the same progress in the 10-year old as I saw in the 70-year old which, to me, was really exciting. And that's played out over the years. I don't see a difference in different ages.

Interviewer: That's a really encouraging thought for adults.

Naturalistic experiment

Barbara: Yes. I mean it is really positive especially as I'm getting older! But no, it's really, really positive and I had anticipated something different.

What I like ... I love data, and tracking students' data. The work I do is like a naturalistic experiment. I've learned so much. You see the problem and you can see all of the symptom structure, and how it impacts the person.

But you learn a lot as you see that cognitive function shift. And there are all the kinds of learning as the cognitive functions that weren't there before start to come online. You start to learn more about that function.

For example, visual memory. There's a region in the right hemisphere that holds the look of things. If someone has a problem here, they get lost not because they can't read maps but because they don't recognize the landmarks. These are people who struggle, and I mean children and adults.

One way we can navigate is - we've been someplace once, the second time we go, we recognize, "Oh, yeah, the yellow maple tree, or the red mail box, I turn right," so you remember to look. But if you don't recognise landmarks, you struggle.

One person I've worked with started to meditate. But she hated it because part of when you meditate, certain aspects of meditation, you do some visualization, right? You call up a visual image of a happy place or the place that calms you. Well, when she closed her eyes, all she saw was the back of her eyelids. She couldn't conjure up any visual images. That's just so fascinating. I was so fascinated.

It's very hopeful to me, very optimistic. We're learning so much more.

And there's this incredible capacity for change, not just for people who are struggling with learning difficulties. There is research now with chronic pain, there's also the mindfulness meditation and the changes that we can make in the brain.

Interviewer: Amongst the many inspiring things, is the fact that you've been able to, for more than 35 years, run a live experiment.

Barbara: Yes. A naturalistic experiment.

The big insights

Interviewer: So from this long term naturalistic experiment are there any outstanding insights? Of all the things you've come to discover, what are the big ones?

Barbara: There are lots. There's one that's really interesting me right now, if I write another book, it's what I'm going to write about.

Cognitive deficits and personality development

Today I've talked about the mental health aspect. I mean, who is different because of their experience with a learning disability and how the world treats that. What I'd be really interested in writing about is the impact of certain cognitive deficits on personality development.

How does the very nature of what the cognitive developments don't allow you to do, by not coming online as expected, impact your actual personality development?

Because the assumption ... if we look at the assumption of personality development, it is assumed that the individual's going to have certain experiences developed mentally.

But those experiences are dependent on certain cognitive functions coming online and there is nobody, as far as I can see in the world, who is looking at that right now.

I know in my life, the very nature of the difficulty led to a very specific way of having to experience the world which led to certain personality characteristics.

And I think even Norman Doidge got interested partly in this work because we're both in Toronto, and he was starting to see some of the clients who he worked with, where he felt one of the things was their problems weren't really emotional. I mean, they had emotional difficulties but there was a cognitive problem underneath and so he started referring some individuals to me, some of his clients, and then tracking their changes, the cognitive changes that were leading to personality changes.

Source of Barbara Arrowsmith's perseverance & drive

Interviewer: So can I ask? As you were talking, as I was listening to you in the audience earlier today, the thing that kept coming to me was your continued drive, your persistence, your perseverance to overcome your own difficulties. Where did that come from?

Barbara: I think probably a couple of places. If we look at nature and nurture, I think it was both.

A couple of parts in my brain that actually did work were exactly that function, the drive. I was kind of driving in a really weird path but I was driven.

And I had a father who was a scientist and he was an inventor. He had somewhat between 30 and 40 patents, and I caught the passion for the creative process. I really didn't understand what he was doing but he come home, after work, and he'd lay out his blueprints and his designs on the living room floor, and it caused excitement for me.

The way he explained what he did with some of the condition of electricity, making it do things. And so there was that exposure, the excitement for that process.

And he really had a firm belief that wasn't limited by conventionalism. My parents were really not conventional and their belief was if you have a problem and there's no solution that's known to mankind, that shouldn't limit you. You go out and find the solution.

So it's almost like I was set on a task. And I have that part that drives, the prefrontal cortex that kept me driving ahead. I had the thought that there must be a way I can find a solution to this. I didn't know if it would work.

So I think it was the combination of both the nature and nurture and then there was just luck that somebody gave me this book in 1977, “The Man with the Shattered World”, the book written by Luria, telling the story of the Russian soldier, Zasetsky, who had the very localized wound and that changed my life.

Because I was on a quest but I wasn't really getting very far, and here was at least the identification of my problem, because it was such an epiphany.

This man in his journal, we were writing using exactly the same language. I'm, 20 years later, halfway around the world, and I was using the same descriptions in my journal as he was using in his journal. He had a brain, obviously it wasn't a wound, but there was something wrong with my brain. So now I knew where the problem was, and then there was Rosenzweig's work, coming out of Berkeley, looking at rats and neuroplasticity. This was 1977, 1978. Nobody was interested in talking to me about this.

Interviewer: You were ahead of the curve there.

Barbara: Yes. And because it was so personal, I lived it; I had to find an answer. So here's the problem, here's what this area he's talking about is doing. And then there was, "Okay, the brain can change" and "Can I find a way to work the brain to change it?

I didn't know if it would work, I had no idea, but I was desperate. I would have tried almost any experiment at that time.

Interviewer: And you were so driven. In your talk this morning you spoke of hiding in the university library after it shut so you could work through the night.

Barbara: Exactly. To me, it’s so obvious. “What do we learn with our brains?” Yes, we bring our hearts and all, but fundamentally, what is our organ of learning? It’s our brain. And what do we do in school? We learn.

So why don't we put the two together, right? And I think we do so many things. I mean, we just normalize, like we go to school to work our brain and we go to school to learn things and then we put those two things together.

Every child can benefit from cognitive stimulation

I believe every child, whether they have a learning difficulty or not, can benefit from good cognitive stimulation. If that was addressed just as a part of the curriculum in the first two, three, or four years of school, I believe the individuals that have come to me would never have ended up coming to me. I think it would make such a huge difference".

I believe the individuals who have ultimately come to me would never end up coming to me, because it would be addressed just as a part of the curriculum in those first few years whether it takes two years, three years, four years.

I mean, any Grade One teacher can point to the students who they know are going to have difficulty but, traditionally, they don't get identified until about Grade Three or Four, because of old concepts of identification. They have to be two or three grades behind their grades. So you can't be two or three grades behind your grade until Grade Three or Four.

So those students will never get identified because by Grade Three or Four, their cognitive functioning would be in place, they'd be out there learning. The fact who everybody would be doing the program, there'd be no stick-ness, just a normal part of curriculum. It normalizes it.

Cognitive mismatch

I've worked with a lot of adults who have what I call cognitive mismatch, where they're bright, they're intelligent, they're successful but just a couple of pieces that aren't at the level they need to be to really perform efficiently in their job. And they would be addressed in those early grades because, yes, they'd be getting the cognitive programming. I just think it would make such a huge difference.

The biggest challenges

Interviewer: Your point in your talk earlier today about the economic costs of not doing this is massively powerful if it can get to the right people. So on that, can I ask you what do you think the biggest challenges are in the future for this?

Barbara: I would say the biggest challenge, and there are a few, is a lack of vision.

I spoke at a parliamentary breakfast in Wellington (New Zealand) just before I came over here. I spoke to one of members of parliament who was said, "A lot of this, well, it is the costs."

There was a lot of interest. But we're thinking short term. It's like, okay, the problem is only Grade One. Let me get Johnny out of my classroom and he's somebody else's problem. Or Johnny finishes high school and then it's a social problem.

We need to sit back and think big picture and have a vision. We are, I hope, a compassionate society and an educated society, and we need to turn our focus to address these individuals who are going to be really marginalized.

The pre-neuroplastic paradigm

Barbara: But it's shifting … because this work comes out of neuroscience, as does Fast ForWord and Cogmed. It's not coming out of education.

I talk about what I call the pre-neuroplastic paradigm. There are still a lot of people who'll say something about neuroplasticity but their thinking is still coming out of what what I call pre-neuroplastic paradigm. It's coming out of the old belief system that the brain is fixed. Even though they'll give lip service to the fact that there is neuroplasticity but they don't really understand what that means.

And if we look at education or special education, if we look at all standard approaches that are used, then I think there's benefit to all of them, because I think they've helped me up to a certain point, but they all come out of the pre-neuroplastic paradigm. Not one of them is based on neuroplasticity.

The premise of every single one of them is a learner's phase. You look at the profile of the learner and you modify the curriculum or the delivery of the curriculum accordingly. So you're looking at their strengths and using those to work around the weaknesses, it's compensatory. Like voice recognition software that translates text into speech with a child who can't read, or a tape recorder with a child who can't remember.

Change the learners' capacity to learn

But they are not addressing the problem, they're working around the problem. They're not changing the learner.

The work of Cogmed and Fast ForWord come out of the neuroplastic paradigm. They come out of the premise that, "Actually, we can change the cognitive functioning of the learner. A learner isn't fixed." So it's a totally different premise.

Education isn't there yet. Teachers have been educated that they need to deliver content, and we can't fault them because they are imparting content. If there's a problem with the individual, the teachers are trained to change their delivery of the content. They're not educated that we actually need to change the capacity of the learner to learn.

Interviewer: How are we going to make improving the students' learning capacity a standard component of our education systems?

Barbara: I think it's just going to take people going out and saying, "This is possible." I'm doing what I can by going out and talking about this. You're doing what you can do by going out and writing about this.

Michael Merzenich does what he does with his cognitive science.

When I started this work in 1978, it was so foreign, right? There wasn't even a context to talk about it.

Well, 35 years later, at least there's a context. Like the people looking at this, there are people who are actually researching it.

Interviewer: And they're starting to get passionate about …

Barbara: Yes.

Interviewer: But it does seem there are some academics who are critical.

Barbara: Yes, there's some who are still coming out of that previous paradigm. They don't want desperate individuals being taken advantage of by things that make no sense. But they're not discerning what are the programs that are coming out this science versus the things that make no sense.

So we get all kind of lumped together. What I find interesting in my work, is some of the people who are very vocal opponents to this kind of work, have done some research to try to demonstrate it doesn't work. And actually the results of the research have shown that it does work.

When I started this work, I thought, "I can spend a lot of time defending neuroplasticity, defending all this argument, or I can spend my time doing the work, putting my energy to working with these individuals, going to Luria's work, trying to figure out more areas of difficulty, trying to work on more exercises, trying to get this work I've done out there into other schools." And that's what I chose to spend my energy on.

Interviewer: Making an impact.

Barbara: Exactly. And what I figured over time would happen, which has happened, is there'd be enough impact that people, if they are sceptical, are being open in their scepticism.

Interviewer: Well, just look at the response to your work here today. 400 or 500 people came here today and it must've been the same in the other areas you talked to.

Barbara: Oh, last night Melbourne was 600, the night before 850. Tonight, I think there are 850.

Interviewer: So you really …

Barbara: Well, it's touching a nerve and these parents. I mean, what breaks my heart is the parents come to me and say, "Well, you aren't here (in Australia/New Zealand) and we want to use the program".

I think I need their help. I can only go out and talk about it. I can't twist the arm of their school and say, "Take this on."

Go out and advocate. I mean, a few years ago a group of mothers at Atlanta, Georgia got together and within about eight months we're four schools in Atlanta.

Interviewer: Parents can be are amazing advocates for their children. We find some parents really push the system.

Barbara: And they make change. Right?

Interviewer: We speak to a lot of parents and teachers, and we're seeing more often now, some parents are blaming the teachers for their child not achieving. What would you say?

Barbara: I would say, "Please don't." People don't get into teaching if you don't really want to make a difference in children's lives. That's the main motivation educators come in with.

And the challenge is they're not often given the resources or knowledge for the children who fall outside that normal group who are not going to learn in the normal trajectory. So how can we blame them if they don't, have the knowledge and the tools to actually work with those children?

And also, certainly in North America, there's 30 children in a class. Teachers are trained to teach to the majority. How can you be delivering 30 different classes? We've given them impossible tasks.

And what I find is the teachers who come to this work, and they're trained in it, they're all of a sudden are just thrilled and satisfied - why they went into teaching was to make a difference. And they start to see these students be able to do things that they couldn't do before, to talk about being finally free of their cognitive deficit.

This re-motivates them in terms of what they got into teaching for. I would like a world in which we collaborate. One of the members of parliament, I love his expression, said, “I say to these individuals who are struggling. You’re not a problem to be solved. You’re a potential to be realized.’”

Interviewer: Beautiful.

Barbara: I thought that was so beautiful. And I thought, “Let’s look at all of these little beings, your potential to be realised. If we’re on your team to help you realise your potential, and we need all come together, parents, teachers, support workers, whoever is there on that team to help that individual realise their potential.” And I believe that it’s going to be multiple ways to help. It’s not just my program.

Interviewer: You spoke earlier about the challenges in getting conservative education systems to open up to the potential of cognitive training.

Barbara: Yes, and a lot of people at the top are quite conservative, right? You don't get there often if you aren't sort of conservative. And not a risk-taker.

Interviewer: That's true.

Barbara: I wish it wasn't but I think the change is going to come from the grassroots. That’s what's going to happen and it is sort of how this work has grown.

It’s just so obvious. It was so powerful that we change in these capacities and everything starts to go forward. To me, it's like freeing up energy in the system. So all the energy is able to go and enjoy the learning and engaging with the world.

Main drivers of the benefits of the Arrowsmith program

Interviewer: What are the main drivers of benefits that you deliver through your program. Is one the intensity of the exercises over the one, two or three year program?

Barbara: Yes.

Interviewer: There's lots of repetition also. Are there any key features, if they weren't there, that would mean the program wouldn't work?

Barbara: Yes. I would say the mastery component is really critical. It's incredibly motivating that they learn that effort leads to mastery and success.

It's those conditions that drive neuroplastic change. If we could spend a few minutes a day stimulating our brain, it's not going to make a profound change. One of the objections some people give to this kind of work is, "Oh, well, everything we do changes our brain." Well, great.

Yes, every time we do anything, there's some reaction in our brain. But to make that profound, sustained change where there's been a deficit or weakness and to bring it up to average or confident functioning, that's not small change. It's that active, sustained engagement where the child needs to really be, the focused and engaged period of time on the cognitive exercises. That's critical.

Effortful processing

There needs to be what's called effortful processing. You have to have a level of effort in the processing of the exercise.

And that's what I talk about, that calibration of difficulty. That's so key. If the function is here and you start the stimulation way out of reach, first of all the person gets frustrated and walks away, but there's no benefit because they can't reach that, they can't engage or start.

A lot of programs for these children who have challenges start way down here. They start at such a simple level that it's like the brain cell is on automatic pilot. It's not processing, it's not engaged.

So what's key, which we do through the assessments, is to find the level of the functioning in that area, and you start the programming slightly out of reach, and then you build in the master criteria. They master it, they come up and then you do the step-by-step progression. So those are certainly key elements.

Interviewer: Thank you very much.