# Transcript

## Podcast episode 10 – Baroness Susan Greenfield explores the neuroscience of teaching, learning and digital technology

Duration:  33.31 minutes

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**ANGELA SCAFFIDI:**

Welcome to the [Bastow](https://www.bastow.vic.edu.au/) podcast – conversations with big thinkers about the big questions in education and leadership today. I’m [Angela Scaffidi](https://senateshj.com/our-people/angela-scaffidi/).

[Baroness Susan Greenfield](http://www.susangreenfield.com/) is a British scientist, author, broadcaster and Member of the House of Lords. As Senior Research Fellow at Oxford’s Lincoln College, Susan heads a multidisciplinary research team investigating neurodegenerative disorders. In 2013, she cofounded a biotech company, Neuro Bio, to develop new tests and treatments of Alzheimer’s disease. In her bestselling books, Susan explores theories of consciousness and human nature. She’s particularly interested in how screen technologies might be affecting how young people think and feel. So welcome, Susan.

**SUSAN GREENFIELD:**

A great pleasure to be here, Angela.

**ANGELA:**

And so, Susan, you’ve had a very interesting career. Could you tell us a little bit about your journey and how it led to your work in the human brain?

**SUSAN:**

Yeah, it’s quite a funny journey and sometimes people can’t quite believe it. Because when I was at school, I hated science because it was all about the amoeba and the amoeba didn’t have a very exciting life. It was just a circle, so you drew a circle and then you drew a kind of egg-timer and then you drew two circles and that was the amoeba reproducing itself. And in chemistry, it was distilling water, and no-one told me why distilling water was interesting or why one would want to do that. And it was just tracing conical flasks, and so on. So, the whole thing, I didn’t really understand why one was doing it. No-one explained why it was relevant and above all, there was nothing that oneself could actually contribute sort of creative in any way.

Meanwhile, history and literature were all about why wars started and why people fell in love and, you know, it was a no-brainer. It was obviously much more interesting. And I was also fascinated by the ancient world so I ended up, initially, for my sixth form – in England, you have to select three or four subjects – and I ended up doing Latin and Greek and ancient history and maths as my A levels, as my advanced levels, to go to university. And I went up to Oxford. The entrance exam that you had to do in those days, I did in Classics – that’s Latin and Greek – with the intention of doing philosophy, which, from having done the ancient Greek world, really fascinated me.

But the way philosophy was taught in Oxford was a bit dry and because I’d done maths, the formal logic you had to do wasn’t very challenging. So, I switched, yet again, to psychology, which was a new subject in those days. And even though I had no science, they let me do this. And then, I got more interested in the brain, rather than behaviour. And my tutor said, ‘Oh, I think you should be a scientist. That would be a laugh.’ You know, literally she said it’d be a laugh. So, I went and saw, after my first degree, the Professor of Pharmacology, and he asked me the equivalent of have you heard of Shakespeare for science. He said, ‘Do you know what a millimolar solution is?’ And I said, ‘Frankly, no.’ And he said, ‘Well, never mind. You can tell us about Homer in the coffee breaks.’

So, this is what Oxford’s like, or it was in those days. And I think, the whole point of the story, actually, and I think, what one can get from it is that if someone’s really motivated, you should give them a go and they will find how motivated they are, in terms of how much they’re prepared to put into it. And also, that you must be able to take on new subjects and admit if you’re not enjoying something and switch to something else and just follow what really interests you and that you feel you can be good at.

So, I ended up doing science, a DPhil in neurochemistry, with no chemistry background, which was quite funny. But I think, such as it is, I don’t regret that because the advances I’ve done in the actual research may have come because I wasn’t brought up on dogma and actually could see it. It’s a bit like the bumblebees, who in theory can’t fly and no-one’s told the bumblebee this, you know? Aerodynamically, apparently, the bumblebee can’t fly but it does. So, I was a bit like that. I didn’t know what I didn’t know. So unencumbered by dogma, I could just press on and do it. So that’s my journey. That’s how I became a neuroscientist.

**ANGELA:**

How important is brain science to education?

**SUSAN:**

This is a wonderful possibility that I don’t think is currently being really exploited sufficiently on two levels. One is, I think, for teachers it’s really important and interesting for them to have insights in neuroscience because neuroscientists have worked a lot on learning and the mechanisms of learning and so on. And I think that for teachers to have a basic in neuroscience can be helpful to them, to when they understand about the plasticity of the brain. And I have two colleagues in England – and I’ll name names – Ellie Dommett and Ian Devonshire and if anyone wants their names, I’ll give them to them, or they can look them up – and they’ve actually worked and written books on neuroscience in education. They’ve worked very closely with teachers.

I think it’s also important on another level as well, especially for girls who don’t take up science, that if the brain was taught in schools – and certainly, in the UK it’s not really taught, because it’s considered too hard and I think that’s a fallacy – then girls like I was at school would actually, perhaps, be engaged with science in a way that they’re not typically. Because if you understand that you’ll actually have insights into how drugs work and what sleep is and why people laugh or how they laugh, you know, those sorts of things. Girls, on the whole, tend to be very focused on relationships and be people-persons more than boys are, possibly. You know, they like interaction and communication. And it might be that by stealth, you could get them to be interested in science in that way, by teaching about the brain.

And nothing is hard. It’s the way you say it. And someone said, once, you should be able to explain something to an eight-year-old in words that they can understand. So, in my experience, it is possible to engage people and talk about science without having to have degrees and qualifications. And I think it would be wonderful if more schools did that.

**ANGELA:**

So, do neuroscientists often work with educators on problems around teaching and learning and should they be doing more?

**SUSAN:**

Yes, and yes. So, some do, like my colleagues Ellie and Ian. They do. But they should be doing a lot more. I think that, especially now, with the increase in digital technologies, people are very concerned about how you separate out knowledge from information because the two aren’t the same, whether iPads are useful in classrooms or not and if you have knowledge of neuroscience, I think you could answer those questions because if you understand about learning and creativity, then possibly, you could evaluate the technologies more readily than if you don’t have those things. So, yes, always there’s room for more.

There’s a very good book by two teachers, Joe Clement and Matt Miles, called Screen Schooled and it came out last year. And I’m endorsing it on the front because I think a lot of teachers would find that very refreshing because they actually look at changes in critical thought over various generations in which they’ve been teaching. They’re in Washington DC and they are two very seasoned schoolteachers. And I know them because they contacted me because they were concerned about this. So, I think that the more neuroscientists and teachers can have conversations, then it will be a win-win situation for everyone.

**ANGELA:**

So, what can you tell us about attention, memory and learning?

**SUSAN:**

How long have you got?!

**ANGELA:**

About half an hour.

**SUSAN:**

Okay. Well, attention requires consciousness, obviously, and that should be differentiated from the mind because you can be conscious without necessarily engaging your mind. You can blow your mind and lose your mind, for example. At the same time, when you go sleep and lose consciousness, you don’t lose your mind, as such. So, I think those two things are separate. And to have attention, it involves, obviously, being conscious but focused on a particular thing and not necessarily aware, even though you’re conscious, of what else might be going on around you.

There is a brilliant movie that if any of your listeners want, I could send, or they could find it. You may have seen it. I don’t know. It’s a brilliant movie of some students playing ball. Just bouncing a ball, like six or seven students. And you’re asked to pay attention to just one of the students – have you seen this? – bouncing the ball. And so, everyone’s focused on this one student bouncing a ball, counting the number of times as instructed. Meanwhile, someone comes on dressed as a gorilla and thumps his chest and then walks out again. And then, when you ask people how many times does the girl bounce the ball – they have their answers. And they say, ‘And how many people saw the gorilla?’ And very few have. Have you seen this film?

**ANGELA:**

Yes, I have seen it.

**SUSAN:**

Now, that’s an example. Incidentally, you can show that in a classroom and it creates a riot. They love it, as you might imagine, young kids especially. So, we know that attention is important but why it’s important is because there’s so much else going on that you could be missing, and so on. And consciousness itself is a huge area. If I can do a shameless plug for a book I’ve written called *A Day in the Life of the Brain*, which is for the general public, which has some ideas about consciousness being like a dimmer switch. You can have more or less of it, you know?

And then the mind, which perhaps is of particular relevance to education, I suggest is linked very closely to a word I’ve referred to recently, the ‘plasticity’ of the brain. And by plasticity, we don’t mean that the brain’s made of plastic. It comes from the Greek ‘plastikos’ – ‘to be moulded’. And that’s something, when I give talks or introductions to neuroscience, we always start with that. And I don’t know how familiar your readers would be with that. But it’s the fact that the human brain is exquisitely able, unlike the rest of the animal kingdom, to adapt to the environment, which is why we occupy more ecological niches than any other species on the planet. And we don’t run fast, or we don’t see well, we’re not particularly strong but what we do really well is we learn.

Now, of course, different animals do this to greater or lesser extents. I always think of the goldfish. I don’t know why I single them out and it’s as though I’ve got some hatred of goldfish. It’s not. But I like to say they don’t have great personalities and they don’t have great individual personalities because they don’t have an individual repertoire of behaviour. The more you have individual experiences, the more you become an individual. And so, human beings are exquisitely adapted by evolution for the brain. Every experience you have will literally leave its mark on your brain. The more you use certain groups of brain cells with certain experiences or certain skills or in an enriched environment it’s been shown, which is a stimulating, kind of educational environment, the brain cells will grow more branches and if they grow more branches, that means they can make more connections with other brain cells because there’s more surface area. Very simple. And the more connections you can make, the more you can see one thing in terms of something else. It’s really quite mechanistic in that way.

**ANGELA:**

Fascinating. So how can we measure the impact of our efforts around brain and learning?

**SUSAN:**

That’s a really interesting thing because, I think, I’m not an educationalist but so far as I see it, quite often, people are looking at the wrong thing. They’re looking at kids having the right answers, but you don’t necessarily understand. So, it’s very easy to evaluate information and information processing but, in my experience, that doesn’t mean to say they understand it. One very simple example I like to give is of my small brother, when he was three and I was 16 – a big age difference – and because I hated him, I was very jealous of him, obviously, I bullied him and I wasn’t allowed to inflict physical injury, obviously. So, the torture was he had to learn Shakespeare. I forced him, by heart, to learn Shakespeare. And he was only three.

And he would come on and there’s a passage in Macbeth – ‘Tomorrow, and tomorrow, and tomorrow, Creeps in at this petty pace from day to day, Is the last…’ So anyway, so he learnt this. He learnt it. He could say it. It was correct. But the passage goes on, ‘Out, out, brief candle, Life is but a poor player…’ Now, had you said to him, ‘What does it mean? Do you understand that, ‘Out, out, brief candle’?’ He would’ve said, ‘Oh, well, I have a candle on my birthday cake, and I blow it out.’ He wouldn’t have seen it as a metaphor for death which is, of course, what it is. So that’s an example of how you can teach someone something and they can say it back to you, but do they really understand it? Now, that’s a separate thing.

And people have distinguished so called ‘fluid intelligence’, such as a small child like my brother would say, where you give the right answer to something and you learn quickly. And ‘crystalline intelligence’, as in a crystal, where things are all joined up so that once you’re given something to learn, you refer it to other things. You put it into a conceptual framework, which gives it a meaning in a way that just regurgitating it back does not.

**ANGELA:**

So, can you tell us about a time when you’ve seen neuroscientists and educators working together to either change classroom practice or to improve learning?

**SUSAN:**

Yes. Again, with Ian and Ellie, Ian Devonshire and Ellie, they’ve actually done various projects of trying to find out how having insights in neuroscience helps teachers. Because sometimes, there’s myths and, I think, one thing neuroscience can do for teachers is dispel some of the myths, like the right brain… Now, let me just rattle some of them off: the right brain, left brain, VAK learning styles, those kinds of things, I think have bedevilled… Oh, that you only use 10 per cent of your brain. That’s another one. And one can go through those and I think neuroscience can help and that’s Ellie and Ian have done in terms of really bringing to teachers proper neuroscience rather than the myths.

**ANGELA:**

So, the right brain, left brain is…

**SUSAN:**

It’s not as if the left brain is the cold, masculine, logical brain and the right brain is the touchy feely. Because you have fibres connecting the two anyway. So, for example, language, will have representation in both areas for things. And there’s some study with music students and the more they actually learnt the music, the more that seemed to be more dominant in the left hemisphere. So, it’s not that you have two separate brains with separate functions, but aspects of a function may be divvied up between the two.

**ANGELA:**

Susan, you’ve expressed concern about the impact of modern technologies on the brain, for example, that technology was once a means to an end but now gives us the possibility of a completely parallel life. Could you talk us through this theory and how you came about it?

**SUSAN:**

Sure. Well, it’s exactly that. In the old days, technology such as the TV or the car, enhanced real life and therefore, I think this is a different type of technology because although it might enhance real life, for many it’s a substitute for real life. So, you can get up in the morning and you can go shopping, you can work, you can go dating and you can play games all without seeing another human being for the whole day. And that has to have an impact on the kind of person you are because if the brain adapts to the environment, if you’re in an environment where you’re communicating with a screen, rather than a person, clearly, I’m not going say it’s worse – that’s a value judgement – but we have to entertain the notion that it’s going to be different from how things have been in the past.

And so, I think this new world is a very complex one. So, to say, as some people do, ‘Oh, are computers good or bad?’ I think it’s a bit like saying, ‘So what’s the problem with climate change?’ as if it’s just one problem and it’s more multifaceted. And I think the different aspects of the screen world, which I have loosely divided up into social networking sites, search engines and video games, all present different issues, different questions and one can unpack those step-by-step in each case. But certainly, as one looks around one, apart from the scientific peer-reviewed studies, increasingly, certainly in the UK – I don’t know about Australia – there’s increasing concern for mental health among adolescents especially, attention spans, small children lacking fine motor skills, not being able to skip and jump, for example.

So, across the spectrum of age, there are concerns being raised. And even some of the experts who used to actually work at Facebook are saying now, you know, that this is a problem. And much of it is designed, they admit, Facebook, was designed to keep people consuming the content. So, someone said, it’s like giving a kid electronic heroin. There’s another article about the titans of Silicone Valley, they don’t send their kids to ordinary schools. They all go to schools that don’t have the technology, like Waldorf schools, for example. So, I think there’s a whole range. Leaving aside the science, just society, now, is starting to comment and to think and to be aware, so from doctors to teachers to the Facebook employees themselves, that something isn’t quite right, or that although the technology can be a great asset, we ought to sort of harness it and have regulation and think of about it and it’s sort of otherwise like the Wild West, where it’s the sort of biggest uncontrolled experiment with young people ever.

**ANGELA:**

Thank you. So, what about the positive impacts of technology on learning and education?

**SUSAN:**

Well, it depends want to achieve. You know, if you want to access facts quickly, then of course that’s a huge positive impact. I can imagine as an aid in the classroom, it could be useful. But it reminds me of an advert a long time ago for recruitment of teachers, where you had celebrities – one was Tony Blair, for example – saying the name ‘Eric Anderson’. Who is he, you know? And it turned out he was an old teacher and the slogan in the end was, ‘Everyone remembers a good teacher’. You know? I think you don’t have ‘Everyone remembers a good iPad’. The whole point, I think, of having a person that teaches you is they believe in you more than you believe in yourself. They encourage you, they excite you, they inspire you and iPads don’t do that.

You know, and I don’t think anyone has done a very simple study, which is where you take a group of kids of similar age and educational ability, divide them into two and give one half iPads and one half not and then just see, six months later, how valuable the iPads have been. No-one has done that. Now, if you are, because I’m a pharmacologist, if you were pioneering a new drug, there’s no way you’d just give a drug to people. You’d have what was called the control, yeah, the placebo and just see how effective it was. And so, it’s a similar kind of thing and no-one’s done it.

So, I do find it amazing that people just unconditionally accept iPads or impose it, as a rule in the schools to have iPads. So, no-one’s really looked at the pedagogic value of it. And I think, in any event, it may be good but, really, at the heart of it, it’s the teacher, the real human teacher who communicates face-to-face and gets the kids excited. I’m sure you, Angela, can remember an exciting teacher. I certainly can. You know, that’s, I would’ve thought, the whole point of having teachers, otherwise you might as well just sit in front of a screen and do it, but to actually help you run the extra mile.

**ANGELA:**

Paul Fahey. And I used to describe him as ‘O, captain, my captain’!

**SUSAN:**

There we are! Oh, right. Yeah. From Dead Poets Society. Yeah. Perhaps he’s listening now. Hello, Paul.

**ANGELA:**

How can we equip our teachers, then, to use technology? So, if teachers are at the core and are very important to the whole process, how can we equip them to use technology where and when it’s useful?

**SUSAN:**

I think the first question is what do they want to use it for and what’s the point? And I think, quite often, we lose sight of what we want to achieve. And people always… It’s very easy to be disparaging and say, ‘Oh, computers are bad.’ As I do, with limited… But it depends what you want to use them for. It’s always easy to find the negative but what’s the purpose? You know, I could ask you – but don’t necessarily answer – what’s the purpose of education? You know, what do you want the kids to achieve? What particular talents do you want them to have? And actually, that isn’t obvious because it would vary from culture to culture. I’m sure if you asked that question in Riyadh, it’s a very different question from asking it in Melbourne. You would come up with different answers as suits the culture and standards of the place and time.

So, I think first, one should ask in each class what do you want the kids to come away with, what do you want them to learn or know? Now, my own view is you want people to understand. That is the most important thing. And if you understand something, then you’re joining up the dots in a new way and then you can go one better. And what’s really exciting is to join up dots in a way no-one else has ever done and that’s called a new idea. Which is why, going back to my schooldays, I enjoyed arts subjects more because when you were much younger, you had the chance to do that in a way that you couldn’t really with science.

So I think that’s really what they should be used for in some way and it depends on the teacher, the class, the children, the aptitude, the age, on how you would use it to achieve that end if, indeed, you agree that’s the end that you want. For me, it would be, you know, that you want real understanding and enthusiasm. ‘Oh, now I get it!’ You know? Now, it depends on the teacher, how do that with the iPads. Or perhaps they don’t use them. I don’t know. And they’re useful as a backup for quick fact checks but not for actually understanding, I don’t think.

For example, if you ask a kid, ‘What is honour?’ Honour. It’s a very subtle, nuanced, complex concept. So how would you teach a child what honour was? With an iPad, just with Google? Much better that perhaps you have stories of the knights of old and the Round Table and stories of people that have shown honour, you know? Because the more you read, the more you empathise with others and the more you can start to see examples of something that doesn’t have a clear, quick definition or a clear quick image to it. Perhaps. I don’t know. But, for me, that’s how one has to start. You have to start by saying, ‘What do I want to achieve? What end point do I want?’ Rather than, ‘I’ve got this flashy gadget.’ You know, bang it in front of the poor little thing’s face, you know?

**ANGELA:**

So, if you were a school leader today, if you were starting out as a school leader, the starting point would then be ‘What actually am I trying to achieve’ and then…

**SUSAN:**

Sure. Totally. And then, how can I help? What tools are at my disposal, including digital technologies, to achieve it? Now, I think one of the problems with the digital life and for the millennials now, not even the millennials but the younger ones, people born after Facebook, say after 2005 or 2006, is that they’re living in the present too much because they’re living in a world that’s driven by external sensory stimulation. So, when we were younger – I imagine you’re the same, not the same age, necessarily, but we’re both in the last century – do you remember saying to your friends, ‘Let’s make up a game. Let’s make up a game. And this box will be a castle. No, it’s a car. No, it’s a…’ And with very minimal props, perhaps none at all, you could make up a game. And why that was so important, you were driving, you were driving it from inside of you and it was your identity, you know? You were rehearsing a little life story. You were a cowboy or an Indian or whatever you were, but you were driving that.

And that, I argue, gives you a strong sense of rehearsing an identity whereas now, if you have everything driven from outside, when are you going to get that inner world that, I think, equips you to be very self-confident and have a sense of identity and who you are. But above all, it gives you a notion of a past, a present and a future because all stories have a past, a present and a future. A life story has a past, a present and a future. And the problem with the screen world is everything is simultaneous. You multitask. It is nonlinear. You can go backwards and forwards. And all of that might sound very flashy but if you don’t have that extended present where you’re living informed by your past and planning your future over a long window of time, then you won’t perhaps have such a robust identity.

And I think there’s evidence that now, younger people have a rather fragile sense of identity that needs constant reassurance from all the friends, and so on, and, you know, the ‘audience’, so-called, of, you know, Facebook. So, I think if I was a teacher, I would start by trying to give the children confidence, in turn enabling them to have an inner world that they don’t have to share with anyone else, that’s theirs, you know? And that gives them a feeling of security and privacy. You know, it’s a secret self, which we’ve all had for granted but now, everything is downloaded and shared and commented on. So, you’re much more exposed and vulnerable to criticism. Whereas if you have your own world, like you would when you were playing a game, you know… ‘I do this.’ Or when you read a book and you’re conjuring up an inner world that’s much more real than a film would ever be or an outside world.

So I think, for me, it’s just one suggestion, that everything is rooted in lengthening of the attention span and you do that by not driving moment by moment with external stimulation but by encouraging the inner narrative that is more vivid and it’s yours and no-one can get in and no-one can share it and that gives you a sense of identity and strength and resilience and confidence and that surely is a good start.

**ANGELA:**

Now, you clearly have a passion for learning and for lifelong learning. Who’s inspired you over the years?

**SUSAN:**

Oh, I can name names.

**ANGELA:**

Yes! Please name names.

**SUSAN:**

OK. I’ll name names. So, I think the first is my mum and dad, actually, because I come from a mixed marriage. Dad was Jewish and Mum, Church of England. So, they had, in the time after the war, huge prejudice and it was relative. Perhaps it would be less unusual now but at the time, it was considered as this horrendous mixed marriage by both sides. So, they had to forge an independent path and they couldn’t just follow the crowd. So, I was brought up like that. You know, I was brought up to always be myself and, I think, that was the first and most important lesson I learned.

Another lesson I learned from my parents was, again, a self-confidence. We didn’t have much money, so I had to have a Saturday job. And I came home one day. I had been on the sweet counter in Woolworths. Quite nice! And I came home with £1 I’d earnt for the whole day. And Mum said, ‘I can’t tell you what to do with that money because it’s yours. You’ve earnt it. I can’t tell you what to do.’ And I still remember that power, when I was 15 years old, of my mother saying, ‘I can’t tell you what to do because it’s your money.’ Yeah? That’s a really important life lesson.

I think middle class kids or kids that are just given things all the time perhaps haven’t learnt that and they’re missing out because that was a fantastic feeling of, again, confidence. And I think that everyone in life will have problems, whether it’s medical or emotional or professional or financial and part of education, surely, is to equip someone to cope with all that and to deal with it and to still have self-confidence and to still bang on. As opposed to these so-called… I don’t know if you have the phrase ‘snowflakes’ here but there’s a phrase, ‘snowflakes’, they’re referred to as these children that can’t cope with those things and will become adults who can’t cope with those things and will be rather frail.

So, my parents gave me a great strength. Some might say too much, of course!

And then there was Veronica Lemon, my teacher at school and the reason I did ancient Greek was simply because she was so inspirational and exciting that had she taught spot-welding, I’d have been doing that, you know?! I don’t know if you’ve seen the film The Prime of Miss Jean Brodie. Yes. So, it was just like that. Because I went to an all-girls selective school, which was not quite like the 1930s in Edinburgh but it was along similar lines, you know? It was an all-girls… A very traditional, academic – very academic – girls’ school in London. So, she stood out as this rather fizzy, exciting, young mistress and we wanted to be like her and go and have coffee in her apartment and, you know. So, that’s why I took Greek, because she was so exciting.

And then another mentor was my tutor at Oxford who thought I should be a scientist, Jane Mellanby. And then finally, a man who was a mentor is John Stein. Now, I’m naming names because I’ve known him for 30 or 40 years and he’s always supported me. Someone wants to find a mentor, someone who believes in you more than you believe in yourself, which I think is a lovely… And I’ve been very fortunate. My parents, Veronica Lemon, Jane Mellanby, John Stein, you know, to have people like that, that have really believed in you.

And I think that’s what teachers do. That’s what, you know… All of them, with the exception of Mum and Dad, have been… Well, Mum and Dad were teachers, in a way, because I was small. So, they’ve all been teachers and they’ve had a huge impact. And that’s why I think it’s so important now, to have these kinds of conversations.

**ANGELA:**

Absolutely. So, talking about parents, what role do you think they play in enabling that sort of healthy balance around technology?

**SUSAN:**

Well, obviously, a very important one. There’s a big debate going on in the UK at the moment, as a big controversy. I don’t know if you’ve heard of it, actually. Perhaps you have the same thing here. It’s quite a delicate issue with no obvious answer, between teachers and parents. And this is in one school with a strong Muslim catchment, where the government say the children should be taught about same-sex relationships when they’re quite young and the parents are objecting. And, you know, I don’t want to give an answer and there is no answer but you can see how that is focusing an attention between, well, who decides in the end, the parents or the teachers and, you know, how do they come to it? So, you know, it’s quite an interesting debate on that.

But the parents clearly have a role, but I think it’s tough on the parents because they’re very busy, they’re overworked, they’ve got lots to do. And I can see how tempting it would be to just park a child and give it… Well, you see. You see them in the street, giving them an iPad to shut them up and they just sort of sit there. So, I don’t want to sound too sanctimonious about, you know, saying what parents should be doing but nonetheless, having said that, you can’t just take something away from someone. A long time ago, when I used to smoke and people said, ‘You mustn’t smoke,’ A) it seems alluring if you’re not allowed to do something but also, you have to put something in its place.

So, it’s no good saying, ‘Get off the computer,’ or, ‘Don’t go on.’ You have to substitute it with something. So eventually, in the case of my smoking, the substitute was positive things, like having white teeth and being able to smell things again and above all, having a lot more money. So, you emphasise the positives. In recreational terms, what do you do if someone’s not on the computer? Well, there’s a lovely email I had from a dad in Melbourne, actually, who said his kids had been using technology all weekend and he finally got them out the house. Took them on a bike ride. And as they were going up and down some steep, dogs-leg bend, or something, they started giggling spontaneously. And he said, ‘That is music to the ears of a parent. I never hear that noise when they’re using technology.’ You know that kind of spontaneous laugh when you’re just having such fun.

Now, that’s the kind of thing that I’m sure most parents would like to do with their children, or perhaps have forgotten how to do. But there’s other activities which I also think are important, that are positive things away from the screen, which actually have the benefit of installing a sequence – the past, the present and the future. So, one is cooking, for example. One is eating together, without the mobiles. One is playing music. Then there’s sport. And all those things have activities that have beginning, middle and end, where you can’t multitask. You can’t multitask while you’re playing tennis. You can’t multitask while you’re cooking, because you’re concentrating on the… And when you’re eating, you should be talking and eating.

Um, sport is the most marvellous thing because we know that really improves aerobic capacity in children. That’s positively correlated with reading and mathematical skills. And in older adults, it’s correlated with cognitive benefits as well. Gardening is very nice because you can see something grow and you have a sense of time passing and you can’t rush it. So simple things that don’t cost a lot of money or are actually free, um, music and gardening and cooking, you know, I think one should bring those back and if you do that with your kids, possibly that would be a very nice way of giving them very positive experiences away from playing Fortnite all the time.

And then, above all, the most obvious form of sequencing that’s effective is reading and if your children are small, reading them stories. Because that gives you empathy. You’ll never learn empathy from a video game. Can you image Jane Austen as a video game? It just wouldn’t work! Because with video games, it has to be action whereas the whole point of reading is you learn how other people feel and think because that’s what a novel’s about, is how people are feeling.

**ANGELA:**

And it also helps you build that inner narrative, your inner world.

**SUSAN:**

You build the inner narrative and the characters have a persona that you can’t actually describe photographically but they’re more real than, say, the film, which is why people always say they prefer the book to the film.

**ANGELA:**

So, Susan, as we end, what does the future hold?

**SUSAN:**

Well, I think it’s the best of times and the worst of times and I think the exciting aspect is it’s in our hands to do something about it and that we especially are in a very privileged society where we do have choices and where we’re not concerned about immediate survival and not being in pain and not being cold and not being hungry. So, for the first time ever, we’ve got the most marvellous opportunity to make the most of our wonderful, unique human minds because there’s been no moment like it for the 100,000 years we’ve stalked the planet and there won’t ever be again.

And surely, the path ahead should be a way of actually really fulfilling our true potential and being real individuals and respecting individuality in others. And what I really would like to live in, as I get old with my Zimmer frame, I’d like to live in a society with strong-minded, confident individuals going around saying, ‘I’ve just had a brilliant idea!’

**ANGELA:**

Thank you, Susan. It’s been a delight.

**SUSAN:**

Thank you.

**ANGELA:**

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