**Confident Questioner’s Guide – David Schley**

Welcome to the Oxford Education Deanery podcast.

In this series, we explore the latest research from the Department of Education at the University of Oxford and discuss the real world implications for teachers, parents and policymakers.

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My name is Hamish Chalmers and I'm delighted to be here today with David Sly from the organisation Sense About Science.

Welcome, David.

Hi. Thank you very much for having me.

David, you've come here to talk to us today about some of the work of sense about science, but in particular a series of guides for careful questioning of evidence that sense about science has produced.

I just want to start by getting a little bit of information about Sense about Science, and what is it and why was it set up

Sense about science is charity that promotes the public interest in sound science and evidence?

Uh, and that doesn't mean we kind of advocate for science or for funding science.

Um, what we're really championing is the fact that science and evidence are the best way

to make decisions for us to understand the world and define the world we want to see.

So for us, evidence is a tool that everyone has a right to use.

We are set up in 2002, when there was a lot of hype and scare stories in the news,

and I think the impact on public life of dodgy claims was starting to be realised.

It was also a time back then when, for example,

journalists didn't really care whether something was peer reviewed or not, so it was quite a chaotic time.

So our mission became to work with decision makers, leading researchers and community groups to kind of raise the standard of evidence in public life.

That kind of meant delivering on three things, really. One is ensuring there's good evidence out there.

For example, we ran a campaign on libel reform that gives, uh,

science research protection in the Defamation Act so that people couldn't kind of suppress good data by suing people.

And now with the journal nature, we run the Maddox Prize, which again celebrates researchers who stand up,

who ask those difficult questions and then bring that sometimes uncomfortable evidence into public conversations.

The next thing that's needed, I think, is that everyone has access to that evidence.

And so, for example, we do a lot of work about transparency of evidence in government.

And nowadays we're looking more and more at AI, which if we think about it,

is a way that society's delegating important decisions to autonomous systems.

So again, how will be made accountable for that. But a lot of that comes down to ensuring everyone is confident to ask questions

about the evidence and data and decisions that affect them seems really important,

particularly at the moment. We have a lot of, um, of spurious claims and you'll see, uh, claims being made on things like social media.

And there's a teacher you often faced with somebody coming along and saying, try this great new way of teaching.

It's going to raise your GCSE levels by, you know, tens of percentage points.

And, uh, the cynic or the sceptic, at least in me, is always a bit wary about that.

But do you see the public as being fully informed about the way that they can, um, interrogate evidence and interrogate claims of that sort?

Some are. I mean, I think the reality is we are all really busy in our lives.

You know, none of us have got the capacity to challenge everything.

So it's it's I think it's about people being able to ask questions around the issues that affect them.

Something that comes through from our work, though, is that if people are really motivated,

then they can ask the right questions and they can be challenging.

One thing that struck me from from our time is looking at, for example, the Hillsborough disaster, which was a long time ago,

but the progress was made there and the kind of justice was found there by families asking questions.

And then you had what you call, you know,

ordinary people who know now a lot more about concrete integrity and steel structure than, you know, you or I or most people.

And, you know, you could say that's more than you would expect. Somebody off the streets know, but they are motivated.

They are engaged in that issue, you know. So I think we should never underestimate the public when they're motivated.

But it's at the same time we have to you know, we all have limited energy and limited resource.

Yeah. But it's sort of reflects the power of a good question or the, the power that can be generated by,

by asking questions and particularly asking questions of perceived authority.

Yeah, absolutely. I mean, I think by asking good questions, we we make better decisions.

It's it's good for society. It's it's good for the people who ask questions, but it's also good for the people who are questions.

You know, we we get better policies. We get better decisions.

Um, so yeah, I think for us, it's really important that people are confident to ask those questions.

And so the work, you know, the work that we've been doing together is exactly about that.

It's kind of about equipping people with good questions.

That's great.

So yes, this refers to the work that David and I were working together on with other members of the A sense About Science team, and more broadly,

to create a confident question as guide for educators or for anyone with a stake in the decisions that are made in the education system.

So the confident question is guide, give us a little bit of a history on on that one.

Um, what was the particular, um, purpose of doing this specifically as part of the work of science about science?

Well, we've had a long running campaign, um, supporting people to ask for evidence.

So this was launched back in 2011. The idea is that, you know, if decisions affect you, then it's good to ask questions about them.

Um, and that can be, you know, challenging politicians or you.

Local council. It can be asking a company, you know, to justify a claim or challenging an advert.

So that campaign was very much about supporting anyone to ask any questions about an issue.

They felt important, but their original campaign was really about how to ask questions and how to understand the evidence.

And so now we're really conscious that people need the tools to do that.

So I think these guides, you know, which I think are kind of providing key questions in education, it's about giving those tools.

And again, it's it's coming back to that idea that, you know, by asking good questions, we're going to get better decisions.

The guide that David's referring to, the key questions in education, um,

will be made available on the Oxford Education Deanery website as well as the science website,

and we hope that people will refer to it when they're faced with a claim or an uncertainty around educational practice,

and it will help them to ask the questions that need to be asked in order to

understand the evidence and its applicability for that particular context.

The guide is organised into three sections or has three key questions.

So should we go through those questions? Just have a little discussion about which what they mean.

Yeah I'm sorry I'll have to I said it's helpful.

It's a toolkit hopefully for any teacher or parent or governor or councillor to be able to ask questions of,

you know, it can be a school like an academy, a trust, a local education authority,

because ultimately we're all wanting to do the best for children and students with the limited resources we have.

So question number one, give us that. Uh, the question on one is what is the problem?

You know, and I think sometimes, you know, we often presented with a solution that's looking for a problem.

Um, I like remember when I was training as a teacher, there was a big push for digital whiteboards,

and I and a lot of my colleagues would dread going into a classroom and finding

them because it was providing a lot of functionality that we hadn't asked for,

and often, more often than not, would go wrong when you did want it.

And the other thing in the back of our mind, you know, that opportunity cost that we are thinking.

I worked in maths, you know where for early learning often there's lots of physical, practical, educational material that you want in the classroom.

I'm wondering how much of that we weren't able to afford because there was a big whizzy digital whiteboard.

Uh, yeah. I, you and I must have been teaching around about the same time, because that feels exactly right for me.

A massive expense on the part of the school for something which, um, ultimately was, was, um, no better than a than a projector screen.

So the first question then is what problem is this program designed to solve?

And you've said already, no, the teachers weren't involved in making decisions about whether the school should school should be investing an awful

lot of money in interactive whiteboards because they didn't see that there was a problem that could be solved by those,

or needed to be solved by those, um, whiteboards. When you're presented with a claim or a suggestion for new practice,

it's understanding particularly what the problem that that new practice is designed to solve, which is the question to ask.

Yeah, I think you can say, okay, what outcome are we actually going to change by making this investment of time or money or energy?

And how big a difference do we actually expect it to make?

You know, those are stark questions that I think, you know, often can stop these sort of wonderful claims being pushed forward.

I think in terms of how big the difference.

We often talk about statistical significance, you know, you know, an intervention could make a statistically significant difference.

But if that change is 1% and that's not 1% difference doesn't mean much, then it's not socially significant.

It's not relevant, you know. And likewise, are we how clear are we.

That outcome is something that we want to change and that this will actually, you know, will change.

Um,

the other thing that's probably worth bearing in mind as part of that conversation is do we have a common understanding of what we're talking about?

Um, we spoke about, um, phonics, you know, the fact that they improve literacy.

Yeah, but what is literacy and what but literacy is, is massive, great big sort of behemoth of an area.

And so, uh, phonics, synthetic systematic synthetic phonics is very good at teaching decoding.

But is that literacy in the round? Yes.

And if it doesn't improve comprehension, if that was your goal, then no wonder people we still see people arguing over the effectiveness of phonics.

And so if if by effectiveness I suppose you mean do children comprehend better or do they,

do they enjoy the, the richness of uh, of um, of literature?

Um, then those are, those are different outcomes that are not addressed, necessarily addressed by the teaching of phonics.

Phonics is one part of literacy is a very important part of literacy.

But it's not the same as saying we're improving comprehension, although clearly it's on the road to improving comprehension.

Before you can comprehend, you have to be able to decode. Yeah, yeah. And and that brings up the second question, which is, you know, does it work?

But I said before you can work out, does it work. You have to agree.

Well it's supposed to be working on. And what, what your, what you're going to measure really.

That's nice to take us to the second question about what's the um, what is the evidence based on or what's the claim based on?

So there are lots of different ways that we can, in inverted commas, do research.

And we know about. Randomised trials and observational studies and case studies and so on.

So that second question is really important to understand what evidence is being

invoked here to support a claim about an intervention or an educational program.

Can we talk a little bit about the relative strengths of those different types of design?

Yeah, absolutely. I mean, I think there's a couple of key things. One, I think is that risk of using kind of proxy measures, um,

a baby dolls to prevent teenage pregnancy is kind of a great example in that you have good

data that giving young girls kind of lifelike dolls changes their attitude to pregnancy.

But if you actually look at the study further on, it doesn't change the rate of pregnancy or it doesn't improve, you know, teenage pregnancy rates.

So again, what were you trying to achieve if you were just trying to achieve a change in attitude, then great.

But how many of us are you know, I think most of us were looking for an actual social impact and change.

So in that case, these infant simulator dolls which which, uh, on sort of observational and evidence that asked people how they felt about the dolls,

everyone was very enthusiastic about them, that this is a great initiative.

It makes people think that they're doing something to reduce unwanted pregnancies among teenage girls.

But unless you actually find out how many people who have these dolls go on to get to have a pregnancy that they don't want,

and you're not really answering the question, that comes through a lot.

There was a, um, a study that was done in Northern Ireland, um, called the Matrix program, which looked at,

um, trying to improve prosocial behaviour among children who, uh, who had behavioural difficult difficulties.

And they put together this program. It was off to school and everyone felt very positive about it.

The parents, the teachers, the young people who were involved in the project as well.

And in the first year of the pilot phase of those studies, um,

they took this positive attitude as being an indicator of effectiveness, but they hadn't put it to the test.

They hadn't compared in something like a randomised trial,

whether prosocial behaviour improved when they did put it to the test in a randomised trial,

they found that actually involvement in the study was um,

or even involvement in the program was more likely to increase antisocial behaviour among the participants,

which was precisely the opposite of what they wanted to achieve.

And so credit to the organisation. They put it together, they noticed this.

They said this is not working, and said while everyone felt that the program was really,

really strong and really positive, actually it didn't have the effect that we had hoped.

I mean, I think those those challenges of unintended consequences, I mean, I think when when we're looking initiative,

you can one you want to look at the evidence to make sure it works and you know that it's not harmful.

But as you said, then you know, that can also kind of be there's unintended consequences.

I think the pilot studies is particularly fascinating, isn't it? Because pilots often work, don't they?

Because everyone's got their energy in there and it's a new initiative and it tries thing,

but, uh, does it then work if you roll it out and does it work in different contexts?

Yeah. Um, which is which is the third question really, although I feel there's lots we can come back to.

But a third question is, you know, would you expect the change, even if it's if it's proven in a,

in a really good study, you know, and it's you've got an experimental mental study.

You feel it was independent. It was unbiased. It was done in the real world.

Is that relevant for the context you're in? So in this school with these children, with these teachers,

with the kind of resources that you've got available, are you going to have the same thing?

You know, simple examples like, um, a digital learning program sounds great, but do all kids have access to a laptop?

You know, we saw, you know, the challenges during the pandemic about the disparities that happened there.

You know, you might think you'll you solve that by giving every child a laptop.

But do they have internet access at home? Simple things like do they have a quiet space where they can use that?

And we certainly saw that in the pandemic with, uh, you know, people in multigenerational living, for example,

where you've got, you know, a lot of people during the pandemic was a was an exception to, to the, to the norm.

But nonetheless, these things persist that along comes some tech guru and says, I've solved the world's educational problems,

but in my context, is it going to work as well as it worked in the context where it was originally tested, which might be very different?

Yeah. So I think you can you can be positive and say, great, yes, I believe this works, but it won't work here.

And those are, you know, that's that's perfectly valid.

And especially when you then have to consider, you know, those trade offs you're making and that the I think that last dimension in your context is,

you know, what are those opportunity costs if we do this.

What else um, are we missing out on?

Yeah. Tell us a bit more about because that's that's often the case.

You know, it's a complex social problem always given to schools to solve the notion that, well, we'll just pile it into the curriculum.

We'll do. Oh, well, people aren't patriotic enough.

We'll include British values in the curriculum or, uh, you know, there's the people aren't good enough at the digital.

I mean, so we'll put some digital, um, sort of skilled stuff into the.

And so this gets piled on and piled on and piled on. But there are only 24 hours in a day, and teachers already work 25 of those 24.

So you know what?

Tell us a little bit more about the the concept of opportunity cost, i.e. when you do something that has to come at the cost of something else.

Um, well, I think your pile on example brings two things.

One is just that, you know, you often bringing things in that, um, aren't relevant for the context.

So, for example, you know, suddenly expecting a teacher to be an expert in an I.T system.

Um, you know, when you know, the pilot, you had tech experts, but suddenly the teacher, you know, it's had already got a massive portfolio.

Um, but even if you fit that right, as you said, those opportunity cost, you know, um,

and I think education are good examples, like individual reading programs for, for students, probably really, you know,

really good evidence that if a teacher spends dedicated individual time with a student that is going to help that student,

but if that teacher's there, then they're not doing whole class teaching.

So you've got a plus, but you've also got a minus. And it's balancing those to to make a decision on.

Is this actually worth it. So again, we're back to the fact that something might work in a particular case.

It might work here. But um, the benefit you're getting to it versus the cost is too great.

Yeah. That reminds me of the, the, the universal free school meals approach to things where, uh, because we've we've just talked about the,

the capacity in terms of time and energy that a teacher would have to expend on an individual reading program.

Uh, and what that means, if the teacher is focusing their attention on one child, what happens to the other 29 children in the class?

But we're also talking about financial implications of this as well.

So schools have finite budgets. They can't spend, spend and spend as much as I'd like to.

So they have to take decisions about what's the best choice in terms of what the available resources are.

So, um, with the infant, uh, well,

initially infant universal free school meals and now talk of of expanding that out to all primary schools in some places.

Um, what's the opportunity cost of that? Well, I mean, I think you know, those me that is that is going to be millions of pounds invested,

which, you know, the question is, if you didn't do that, where could you spend it elsewhere?

Some of these are quite practical questions, I think, with with parallels with things like the winter fuel allowances, those questions about, okay,

we try and target where those resources to those who need it,

but actually we're going to spend so much time targeting that it's cheaper to give it to everyone.

But then again, you take a step back and say, okay, we spent it on school meals.

We couldn't spend it on that. And if you went to school with rack, you know, the concrete that's crumbling, then you might ask those questions.

I said, we advocate for evidence and evidence based decisions,

but I think it is also worth acknowledging that our decisions that are value based and those decisions that evidence based,

you know, um, if your council says we're going to build a museum in the town because we're really proud of this part of our history,

you know, that's a that's a values based question. That's something, you know, you can poll the public, you know, whether they agree with that or not,

but you're not going to get science to give you the answer of whether to go ahead.

On the other hand, if the council says this is going to bring in income,

this is going to create jobs, then you can actually ask for the figures and quiz the evidence.

So I think it's worth separating those. And I think free school meals is an interesting one about do we think it's a moral right,

in which case we're not looking at the bottom line and doing the sums?

Or are we saying this will, you know, this is going to objectively improve education measures more than if we spent those millions of pounds on,

on books, on teaching assistants or whatever else?

Yeah, that's a really nice way to bring the three questions of the confident question as guide together.

So what problem is it designed to solve. And so we know that there is good evidence that breakfast clubs, for example, improve, um,

curriculum outcomes both for the children who can't afford breakfast, but also the other children in their class,

because I guess because the the sort of learning environment changes as a result of

well-fed children working hard and not distracting others based on being hungry.

Um, there's then the, the, uh, the second question of, um, what is the evidence based on it?

So we've got a good, um, so experimental studies that show that this is a, this is a real outcome,

that breakfast clubs do improve outcomes for other people, as well as for the children who are being specifically targeted for this.

Uh, but then what is the value and what does it mean for my context?

Uh, I am I in a, in a forgive the stereotype,

but some leafy suburban part of the country where everyone is getting well fed at the beginning of the day,

or I'm in a part of the world where a part of the country where where it's much less likely that children will be well fed when they arrive at school.

And so then there's the you know what? What does the evidence tell me about what this will do in my context specifically,

and to take those into account when making what one would hope would be an evidence based decision.

Yeah. And I think, for example, also I think about the fact that it becomes a local question.

And so it is local people who need to be asking those questions, who should feel confident asking those questions and hence, you know,

giving people the tool, tools to do that, because these are decisions that are affecting your life, your community, your family.

You know, it's your council money that's being spent often in many of these cases.

But often these things are more about money. But people who are affected are best placed to ask the right questions.

Great. Well, thank you very much, David, for coming in and talking to us about this project.

The, um, as I've said,

the the confident question has got to be made available on the Oxford Education Deanery website as well as a Sense About Science website,

and we will put links to those, um, uh, materials in the show notes,

as well as links to sense about science so people can learn a bit more about that.

And the, the, um, ask for evidence uh, um, campaign, which, uh, which I think we should all, uh,

take careful note of because we all have the responsibility to make decisions

that are going to be the most beneficial that we can for our particular context.

Um, and as the, as the the guide says at the end, by asking good questions, we promote better decisions.

And so I hope that this, uh, goes some way to, to helping more people to be able to do that.

Brilliant. Thank you very much.

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