

The OU Education Conference 2024

Connecting Unseen Dots

Speakers:

Mathew Rees Jones

Dr Carolyn Cooke

MATHEW REES JONES: I think I'll move on to the starting point. So this is something that you may have seen before. So again, feel free to attempt this yourself. Here is the classic 9 dots puzzle. So it's often used to illustrate the kind of fixed thinking both from a psychological and mathematical kind of puzzle. So the idea is that you need to connect those dots with four straight lines without lifting the pen. So if you were to just have a go with that, you would find that it's quite a difficult challenge. But of course, if you've seen it before, there is a little bit of a trick to it.

And that again, I don't know if you've tried to do it. You probably find this impossible, but what you'll find is this is the solution. So the solution the puzzle illustrates that you can only solve the puzzle by thinking beyond the initial dots, as they appear, obviously outside the obvious boundaries, and you need to connect it in different ways. So you're looking at new connections beyond the confines of, for example, dots in this case, but in our case sort of disciplines and subject areas. So it allows for an integration of different ideas because you are not confined by one kind of set rule, which is what this puzzle illustrates. I will move on to Carolyn now we'll tell you a little bit more.

CAROLYN COOKE: So really that idea of connecting dots beyond what you immediately see is kind of the theme that runs across our entire talk. And when you talk about about interdisciplinarity, you inevitably come up against all the definitional stuff about, well, what do we mean, how is it different from cross disciplinary? How is it different from multidisciplinary? How is it different from transdisciplinary? And I have found this person's Joe Bailey particularly useful.

I've put the link in the chat, particularly useful at at conceptualising the difference between these different terminologies. So I won't go through all of them, but we'll start in the middle with the multidisciplinary term, and you can see here that she's talking about it in terms of food ingredients. So whereas 1 discipline might be characterised as one type of food in a multidisciplinary sense, you're combining several types of disciplines, several types of food.

But she's describing it as a salad bowl where all of the different ingredients in the salad bowl are still totally recognisable and you can pull them apart really easily because they maintain their bounded characteristics as a discipline. In interdisciplinary work, she describes it where that separation of the ingredients, that ability to recognise the ingredients becomes slightly mushy, so she calls it a stew.

OK, so the ingredients are mushing into each other and therefore there are only partly recognisable, so it becomes a little bit of something different. It's a bit of a move away from disciplines as having tight boundaries to something a bit more interconnected, a bit more blurred, a bit more crossing over the lines and therefore changing the very nature of what it is. OK. Whereas the transdisciplinary aspect which is something I'm kind of interested in, in my writing, but we won't go into deep detail about today.

It's more about actually physically changing the nature of the ingredients that actually you're developing and creating and generating something completely new which she describes as the cake where the actual core, the kind of the raw materials actually get transformed into something different. So hopefully that gives a kind of a way of thinking about the different terms and today we're focusing on that interdisciplinarity, that's stew of different ideas, but we need to talk about that in real terms about practise. So we're going to move on to talk about that now Mathew.

MATHEW REES JONES: So, I'm just going to place that word in the middle water.

And given the fact that many of you that have joined us, are practitioners and, you know, classroom practitioners and teachers and lecturers and so on. If you are planning learning based on this term concept, what types of things come to mind? What are the things that you'd be thinking about as teachers or an educator? How and what would you be thinking about in terms of, you know, the things that you'd want children or learners to learn about? So it's just an initial thought. So Catherine has already started to respond. Yeah, flooding environment.

Yes. we're going to local rivers. There's all sorts of things that we're beginning to assign sort of, you know, things that we know about to that concept. I'm just going to share this with you now. So again, feel free to to add your ideas. Carys has got there sort of experiential play with water, floating, sinking, visits to the seaside.

Paula with play measurement, temperature, all sorts of things. What I'm going to share with you now is this, which is these are the initial responses by children to the concept in the middle, which is water. Or as we say in Welsh Dwr, and what the children wanted to learn. So we've asked children what they want to learn. This is what they've kind of written down. So, and the activity the teachers basically asked what do you want to know about in terms of

water. So if I just give you a few moments just to have a look at that, I hope it's clear enough on your screen that you can see some of those. Again, feel free to add to the chat box anything that you think is quite surprising or intriguing about what the children have included on their kind of questions or what they would want to know about. Is there anything that sticks out for you?

So I can see some people, I love Amir, was it are merpeople real? Of course they are. Of course they are. So I could see some of you are typing away. Again, there are pictures in there. There are the words. There's lots of things that have been included. You see, a lot of you are typing. I'll just wait for you to respond.

But it's quite an interesting way of going about it. So Jennifer has got the focuses on water as a specific environment, a place where the mythical creatures and sea creatures live. So again, we're bringing in kind of stories, we've got prior knowledge, we've got you know a bit of the environment. So that's kind of, is that science, that geography? And Paula, I like the fact that someone has made the leap to habitat. Or is it related to the learning experience of a beach?

Do starfish bite? There's a lot of intrigue here. Isn't there a mystery is associated with it. Again, if you look, we've got Titanic that's been thrown in there, polar bears. So somebody has made a connection to polar bears. Is that because of the snow?and then do polar bears get cold?

So these now are really diverse aspects and sort of concepts and if you like, disciplines and subject areas and things that the children want to know about. But they're all over the place. We have we have myths, we have stories, there's literacy there, there's even some chemical formula if you look carefully. Are pirates real? there is lots of intrigue. And this, actually, is how children often articulate their own understanding of the world and learning.

They don't think in singular fashion. We decide often in education or we're going to do mathematics and so on. But learners, especially younger learners, tend to think about things in the whole and I think that that's something that interdisciplinarity is, that's one of the strengths of it because learning isn't just about 1 concept, it's about many concepts.

So it's quite an interesting one. And again, another thing you could look at is what are the different disciplines that are coming out of the children's idea. So it's quite an interesting one. And again, it's just showing how all these things are connecting to that overarching term of dwr or water as it is. But if we move on to the next slide, I'll hand over to Carolyn here.

CAROLYN COOKE: Yep, So that's the kind of a real practise example and we'll talk more about how that relates to different sectors of education, different age groups, different curricula, etc. But you know, Matthew's sort of role in Welsh curriculum, mine in Scottish curriculum and having previously taught in English curriculum, I think it's really key to note the differences and similarities across the different nation curricula in the UK in relation to interdisciplinary learning. So in the middle, in the orange column, we've got the traditional English 1988 curriculum subjects.

Recognising fully that that varies enormously now between different mats, different schools, different areas of the country. But just recognising the fact that in the green we've got the Wales and in the blue we've got the Scotland. That the Scottish and Welsh curriculums have made space specifically and developed structures specifically to promote interdisciplinary learning. And they've done that for a variety of reasons that are articulated in the curriculum documents.

But we really know that just putting structures in place does not always lead to the type of interdisciplinary learning that we've just seen an example of. So I know personally from Scotland that just grouping areas of learning into, I'm sorry, disciplines into areas of learning. So for example, down here, you've got the expressive arts, which covers all of the different types of artistic and things that go on in a school or the health and well-being which will often encompasses PE that the structure of that doesn't always mean that the interdisciplinary learning in those areas is good.

So today we're going to kind of go into with your sort of expertise that you bring from your context and your thinking around this, we're going to go into 3 core questions, Why do we do interdisciplinary learning? Why is it important? Where and how does it work well? it would be brilliant if we could share some really good examples of it from our experiences to see what it is that we can sort of promote in our settings to make it work better and what enables interdisciplinary learning?

Often when we talk about it practitioners very fairly put up all the things that create barriers to interdisciplinary learning. But we would really like to talk about what enables it today so that we can talk positively about what we can do as next steps and action points.

We end up in jobs that don't exist yet, that are yet to be imagined. And to be honest with the advent of AI and the speed at which that's changing that's probably a vast underestimate. So that's a really good example. Now that's for lots of reasons. So some of the reasons for that might be that kind of turn that we've had in the information age, where how you know something, how you find out about it, what we know and how we share it is shifting hugely. So that transition model of education of we're going to give children knowledge now that is going

to aid them in later life is a very questionable position and that's not to downplay disciplinary knowledge but it's to say and So what? So it's like you know. Yes, and?

The complex wicked problems that we face as a society, not least climate crisis, requires more than knowing something. It requires that generating that creating of new or different knowledge rather than recycling current thinking, we've all got to carry on moving. And in the past the argument would be that that kind of knowledge generation is for the few. But now that kind of sharing, that democratisation of knowledge means that it's for all of us to take active parts as change makers and to make sure that our students and our young people are developing the skills to be change makers themselves.

And finally that idea that you know as is happening with so many of us that that shift away from a career for life into a portfolio career and that requires bravery and creativity and the transferability of skills across different disciplines and expertise boundaries, seeing how things can be applied in a different way. So those are some of the kind of the, the key arguments as to why interdisciplinary learning is so important. So now we move on to Question 2, Mathew.

MATHEW REES JONES: And this particular model is from the World Economic Forum. And the World Economic Forum has you know has lots of industry and educators across the world who work together on what is the future of education and obviously how it will impact on the future workforce and so on. But this is quite an interesting model which is it's from the 2016 report. Again, there is a link on the padlet which I'll share later if you want to actually read the whole article.

But it shows if you look in the middle, yes, it has, you know, we have well on the left, we have foundation literacies, but that middle aspect is what I'm really focused on here in terms of these competencies.

And if you look at that, the first one, well, the number seven is all about critical thinking and complex problem solving skills.

Those are the priorities in terms of future education systems, for the future workforce and so on. Being able to problem solve, problem solving, obviously, and sometimes very complicated problems. I think Karen, you mentioned wicked problems a little bit earlier on. That ability to use the knowledge gained from lots of different areas and making connections will allow problem solving to be, effective when you're able to connect things. And incidentally, I decided I thought I'd better sort of check that this particular publication was not out of date.

And they've updated their list of the things that are important in education systems. So in 2020 they did this and they increased the priority of what future learners need in terms of their priorities and what they've looked at again is that critical thinking and problem solving and difficult problem solving is one of the key aspects that you need. And interdisciplinary learning and examples that you are providing is allowing learners to make connections so that they can solve those problems. Because let's face it, the world currently probably has lots of challenges, climate and all sorts of different things that require expert problem solvers.

Are very much in line with what I'm looking at. And a particular model that I, I find really, it's quite pivotal to some of the thinking that I've got in terms of how we teach, and how we perhaps teach interdisciplinary kind of learning and so on. So on the screen on the on the left you will see a model. And this model is by Kremlin Barnes and Scoffin, 2009. And it's called the Creative Teacher Model.

As well as looking at interdisciplinarity, I'm also interested in creativity, in terms of how the teacher goes about generating learning experiences by or through an interdisciplinary curriculum. So this particular model resonated with me. And again, if you look at it, that pedagogy, obviously you know the act of teaching and so on is that centre circle.

And then the model then says that what influences that is of course the personal characteristics of the actual teacher that is going to teach in a particular way.

And the impact then of the environment and the environment, I view that to be is the school, but also the ethos that that school has, you know, a school that is forward thinking perhaps and allows teachers and practitioners to kind of try things differently and do things differently. The curriculum for Wales, for example, at the moment is theoretically, it's allowing schools to perhaps try things in different ways and teach in different ways. So it's very exciting.

So this particular model kind of resonated with me. And I've kind of used that as the basis for a lot of my thinking in terms of, well, you know, what is that interrelationship between how the teacher teaches something based on how they naturally are in terms of their own personality and the fact they might take risks and they like to try different things. And also the impact of the school. But what's really interesting now and what's emerging from the very preliminary sort of bits of data that I'm collecting. So I've been going out to a number of schools, including secondary schools.

What I'm beginning to find out is there are some other aspects, that are interplaying into this, if you like model that are not included in the models. We talk about the environment, we talk about the teachers and we talk about the act of teaching, but what it doesn't show is the impact that the learner is having on the whole creative process and how they want to

interconnect. So what I'm beginning to see, and it's every time so far, So I've been out now to three schools, and four different practitioners and they each have said, well, actually it's the pupil voice is influencing how we then think about how we teach.

It also influences them in terms of their own ethos. One quote I had off one teacher was to say, well, I can't expect the children to make these connections if I don't make them myself, even though it's perhaps I prefer to have things in kind of, you know, compartments. I actually have to show that I'm willing to try different things and to connect things in different ways. So what you're beginning to, what I'm beginning to see is the impact that the learner and the pupil voice is having on the decisions that are.

The school are making the teacher's making on how they go about teaching things, which is really interesting. And in turn the actual once the teacher has kind of come up with their kind of their planned lesson or how they're going to do it, that then reciprocates back and the children are learning, and learning more connections. So they started off they started the creative thought process.

Yet they're also their recipients then of what the teachers are or of the experiences they're having because of what the teachers have planned, how that's improving their connections and understanding. It's a really interesting thing which I never even thought about when I was looking at this. And sometimes we forget the most important person in all of learning is the actual learner themselves.

So that is something that's really coming out quite prominently in what I've seen already in schools it is a significant thing and those, I can see a number of practitioners that are based in Wales and we have heard a lot about it being a child-centred approach that perhaps in terms of the Curriculum for Wales. So is it a surprising aspect to think that the learners have influence over what's going on?

I didn't think it would be, but it does make sense, when you when you think about it. So that was something that is beginning to emerge from my initial studies and I found it really, really interesting because I never even contemplated that aspect of it.

CAROLYN COOKE: So just before moving on, Mathew, I think if you look at the water picture that you shared earlier on in the session, the writing literally was on the wall in that case. As to the children are the ones that are making those connections and are making those dots. I think maybe we just need to make that the central feature of the story about what interdisciplinary learning is. It's really is fascinating stuff. Fascinating.