Laura Molway 0:00

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 policy makers. Each podcast is accompanied by a deanery digest, a short, plain language summary of the research, which can be downloaded from our website.

Joe Bullough 0:26

Welcome to the Oxford Education Deanery podcast, I'm Joe Bullough and I’m here with Professor Jenni Ingram and Dr Stuart Cadwallader. Today we're discussing PISA, and both Stuart and Jenny have done an enormous amount of work analysing PISA performance in England, Wales and Northern Ireland. So, we're looking forward to speaking about it. Welcome, Jenny and Stuart.

Jenni Ingram 0:46

Thank you.

Stuart Cadwallader 0:47

Thanks very much for having us.

Joe Bullough 0:49

So really excited to dig in here. Can we start a little bit with what motivated the work, how the work began?

Jenni Ingram 0:57

So PISA is a large scale international assessment that's been going on for many, many years now, since, I think 2003 was the first one, and it's held every three years, and it's used to benchmark performance in Maths, English and Science, but not the academic Maths, English and Science that might be in our school curriculum, but the ability for students to use their maths, use their science and use their reading in real life, in contexts. So, it's an assessment of 15-year-olds in 2022 it involved 81 different countries and education systems, and it looked at what 15-year-olds could do with their mathematics that they'd learned in school or in their reading and in their science. And maths was a particular focus. So, every three cycles, they pick a focus, and it was maths in 2022 and in 2025 the focus will be in science.

Joe Bullough 1:55

Fantastic. Great summary. Thanks, Jenny. So now I wonder if we could talk a little bit about what you did in terms of analysis?

Jenni Ingram 2:02

So, this was a collaborative project, and we worked quite closely with Pearson, and Pearson were responsible for the sampling and the data collection side of things, and then with the huge amount of work that they put in, recruiting schools and collecting the data, we were then responsible for analysing that data. And we analysed the data for England, Northern Ireland and Wales.

Joe Bullough 2:22

I mean, yeah, it's an enormous amount of data to sift through, and I'm aware, also having sort of read through the digest, that you're looking at quite a few questions as well, not just sort of subject specific, but also quality of life. You're also looking at attitudes, and you're also comparatively looking, not just at sort of 2022 in a sense, but also back at 2018 and comparing those and then also looking at overseas progress in comparison to England and Northern Ireland and Wales as well. So, a massive amount of data. I mean, how did you navigate that?

Stuart Cadwallader 3:02

I think with a lot of help and guidance from the from the departments that were that wanted us to produce the reports, yeah, as you say, as long with the assessment results themselves, you've also got questionnaire data that you can look at, and then you can draw those different sort of responses to the questionnaire along with the performance data together in a variety of different ways. And you know, if anyone does want to go and look at the reports, they'll see that they're very, very, very long. But in actual fact, you know, there was so much more we could have done. There's so many different ways you could cut the data and compare the data that you know those reports are, you know, sort of drawing out some of the key points really, in this lot, that, a lot that you can do with the data, much which is actually publicly available now. So, you know, other people and other academics can also pick up this, this very rich data source, and analyse it.

Joe Bullough 3:54

Fantastic. And on top of that, you managed to put it into a digest, concise as well. Very impressive. Well, yeah, so what I really want to dig into now, and we'll touch on some of the top line findings, but hopefully dig a little bit further in as well. What did you find through your analysis?

Jenni Ingram 4:15

So, if we start with the headlines, which are the ones that kind of meet you see in the press when it when it's all released. So, this is where we specifically looked at how well we did in mathematics or mathematical literacy, how well we did in science, how well we did it in reading. And we looked at that for England, Northern Ireland and Wales. And you can see the comparisons are made with a group of countries. These might be countries where we've got a similar education system to them, or it might be countries that have got a similar history to the way that they've performed in PISA. So, we can see how changes might happen over time. And then we also compare ourselves to high performing countries, but those countries in education systems where actually we could learn from them. Some of the countries that take part, it would be difficult to translate what happened from that context. But if we look at our performance in mathematics in 2022 for England, that was significantly above the OECD average. And the OECD average is an average across 31 or 32 different countries and education systems. So, England was significantly above in all of the curriculum areas, maths, reading and science. With Northern Ireland, that was similar to the OECD average. And in Wales, it was slightly below the OECD average in the different subject areas.

Joe Bullough 5:44

Is there anything you want to add to that, Stuart?

Stuart Cadwallader 5:46

I was just sort of thinking looking back rather, to kind of 2018 and of course, you know, we've had a global pandemic between now and then. And you know, I don't think the data can tell us a huge amount of the extent of the impact of that pandemic, but you can see, obviously, that the PISA scores have declined internationally since 2018 so it does kind of give you, give you a sense of the impact that the pandemic had on education worldwide.

Jenni Ingram 6:13

And the decline in England, Northern Ireland and Wales, was slightly less, in some cases, or similar to so we weren't worse off than other countries in terms of the impact that the pandemic seems to have had on students learning.

Joe Bullough 6:27

So that's really interesting, and as a headline. So, I wonder if we could talk about the other headline findings which were under sort of what you found, and questions relating to sort of disaggregation of socioeconomic status?

Jenni Ingram 6:42

yeah, so that's one of the key things that we can learn from PISA. They do a huge amount of work on equity within education and different measures of equity in education. So, one of the things that they look at socio economic background, and another thing is gender. And so, it's looking at differences between the way that boys and girls answering the questions on the different assessments, and you'll see that there is always a gap in England and Northern Ireland and Wales between the students with the highest socioeconomic profile and those with the lowest socioeconomic profile. But that gap is slightly narrower. That gap is smaller than it is in many countries and jurisdictions, and particularly in Wales, it was quite narrow this year. So, actually, in terms of being an equitable system, we're making quite a lot of progress in that area, and PISA is one of the ways that we can bench that compared to other countries and jurisdictions. And in terms of gender, we're quite similar to the international patterns. So, girls do quite well in the reading assignments and the reading assessments, whereas boys do really well in the mathematics assessments. And that gap is relatively narrow within the UK nations, but it's still something that we need to think about and need to address. But also, there's a lot more in the data that we haven't yet unpicked that could tell us a little bit more about the nature of those differences that exist in the data.

Joe Bullough 8:14

Interesting. So, fantastic, I'm going to move on to another finding, which is related to attitudes and life in school as well. I'm keen to dig a little bit more into that.

Stuart Cadwallader 8:28

Yeah, certainly. So, one of the things that the questionnaire that kind of goes alongside the PISA assessment does is ask students to kind of rate their life satisfaction from high to low on a sort of one to 10 point scale. Now, obviously there are, there's interesting things about that, about how people from different countries might use that scale differently, how students might, you know, decide on how to answer that question on any given day. So, there's obviously limitations around that. But I still think it's a kind of a useful snapshot of how you know students, young people, 15-year-old students, are kind of feeling in terms of their life satisfaction around the world, and it's in the three countries in the United Kingdom, actually the way they respond to that scale, they report lower life satisfaction, then the average across the OECD. So, I think, you know, I think that's particularly true in England, in terms of the height giving the highest ratings, that is.

Jenni Ingram 9:33

It might be worth just mentioning that students in Northern Ireland, there were quite a few that gave the highest rating, well, more than in England and also in Wales, there were quite a few students who did say they were very satisfied with their lives, and we don't have that many students who are right at the bottom of the scale. So, while you've got about a fifth of students in Northern Ireland saying they're really really satisfied with their lives. You've got, it's about six/seven percent saying that they're desperately unsatisfied. And that's, that's actually quite a small proportion of students.

Joe Bullough 10:09

Okay, well, that's, that's really fascinating information and useful in the sense to even if it is the sort of own students’ self-perception of life in school, to have some of that data. Okay, we're going to come on next to talk a little bit about, sort of what this all essentially means if you're a teacher or if you're a parent or a civil servant. Could you tell us a little bit about what your headlines would be for them?

Jenni Ingram 10:36

I mean, I think the main headline that we can learn from this is that we're doing well. So, our attainment in maths, reading and science, we're up there at the in the top of the countries, even where we're similar to the OECD average, there's still, we're still a higher performing country within the 81 or the 82 countries that took part. What it can tell us is a little bit more about some of the subtleties within that. One of the things we learned from the questionnaire is that generally, pupils in England, Northern Ireland and Wales, feel safe, and they feel safe in school, and they feel safe going to and from school. They feel safe in their classrooms, as well as the broader school environment. And that we come out quite well with, we’re very similar to the OECD average on those measures, sometimes we're slightly above the OECD measures. So that's kind of reassuring to know that, like it's 90 something percent for most of the questions, pupils are saying that they feel safe in school.

Joe Bullough 11:44

That's a great indication.

Stuart Cadwallader 11:46

Yeah, I think this and this sort of it's interesting, because the data does allow you to draw some sort of distinctions. Now it asks about, for example, experiences of bullying, which I know is distinct from how safe you feel in school. And it might depend on what you define as bullying and how that varies across countries, which is why we don't like to make those international comparisons or measures like this. But I think around a fifth of students in England and Wales, and I think 16% in Northern Ireland reported that they were made fun of at school. And you know, this is higher than the average across the OECD of 12% and then, you know, I think there is a relationship between performance in PISA mathematics and whether you feel like you've experienced bullying. So, all of these things, obviously, they have an impact on the school environment. And you know, that's that students sort of sense of wellbeing, I suppose, and that, you know, can manifest and how much they can engage with their schoolwork. I mean, that is something that you know that can be addressed at the level of the school and the kind of culture of the school. And I know teachers and schools do a lot of work to try and address things like that.

Jenni Ingram 12:52

I think belonging to school, a sense of belonging to school and belonging to the school community, that's another area where for a long time, there's been a strong correlation between where the students feel they belong in school and their performance in assessments. And that's also true in PISA. And if you look at the England, Northern Ireland and Wales data for sense of belonging, it's around 60 to 66% of students in England, Northern Ireland and Wales, said that they felt that they belonged to their school community. But this is lower than the international average. So, the OECD average for that was 75% of students, and we know that there is a relationship between a sense of belonging in school and performance in PISA.

Joe Bullough 13:38

Very interesting.

Jenni Ingram 13:40

In terms of the assessments, we there are different aspects of the assessments. So, for example, in the mathematics, we did really well compared to internationally, which is where we can make strong international comparisons. We did really well at data and uncertainty and probability and those sorts of questions. So reading and interpreting graphs from real, real-life situations that are about data, we did relatively well on that, but we were relatively weak on anything that involved visualisation or space and shape or geometry. And that's an area of weakness for us. So, what we can learn is, well, what's going on. That means that, given that we are a country performing at this particular level, why are we weaker in geometry but stronger in data? And that's not to say, do less data, because data is really, really important, but actually, well, what could we do to help with the geometry side of things? And similarly, we'll do the same thing when we look at science in 2025 that we'll be able to look at lots of different aspects of science and just see what we're particularly good at and what areas we might want to work on.

Joe Bullough 14:52

Interesting to hear that being safe in school is a really important factor in terms of educational outcomes too, and very interesting to hear about the assessment of maths and the different areas, and I think that that carries implications for how curriculum is set up, right? Stuart, would you like to add anything to the takeaways for stakeholders?

Stuart Cadwallader 15:14

Yeah, I suppose one of the things I would say is that I think there is, there's obviously great value in this and about understanding, you know, being able to look at those kind of national pictures in the first instance, and even consider the international picture overall, and think about, you know, what it's like in the school in which you work. But I think obviously there's, you need to be really careful not to kind of over generalize some of these things. So one of the things that I always think is really important is, there's a risk where, you know, you get the PISA league table, where you see where countries rank relative to each other, and you look at it a bit like, I know, the Premier League table, or something like, oh this country's done better than this country, but actually there's, obviously these results are based on samples of students, and in most cases, like some countries do their entire country, but they're based on samples of 15 year olds. So, there's error within those and a lot of the time the actual rank orderings themselves are within that error. So, I'd be a bit cautious about sort of looking to countries that are just a few places above the nations in the UK and trying to draw too much to them, because there is a lot of kind of noise in the data. I mean, that's not to say, that I don't think this is very valuable, but I guess it's information that we should all use responsibly. Is what I'm saying.

Joe Bullough 16:30

Absolutely. Yeah. And I think we've heard a few times in policy, both overseas and in the UK, we want to be X number in the PISA table. Yes. Okay, so, an important caveat then.

Stuart Cadwallader 16:45

It's also worth talking about kind of the nature of the sample, because obviously, the samples for each of the three UK nations you try to draw as representative of sample as possible. There's a really, you know, there's a huge amount of effort goes into that, both at the OECD level and at the Pearson level to make that representative sample. But of course, it's really hard. Some schools can't take part for various reasons. And we sort of did a lot of work, actually, when we realized that the sample, the response rate, wasn't quite where we'd want it to be. Well, I say we, Jenni did a lot of work on something called a non-response bias analysis. So, I wonder, Jenny, if there's anything you know, there's a few little things in that that might limit the extent to which we feel really confident in interpreting the findings.

Jenni Ingram 17:29

Yeah. So, what we did was we looked at the sample that we were aiming to get, and we compared it to the sample that we actually got, and we had to use the data available to us, and that varied across England, Northern Ireland and Wales. So, what we did was, if we had prior attainment data, we looked at that, if we had socio economic data, for example, free school meal eligibility, we looked at that. We looked at gender. And what we found for particularly England, and to quite a lot of extent, Northern Ireland as well. Our samples had slightly higher prior attainment than the sample that we were aiming for. So, there is a little bit of a caveat in terms of interpreting PISA, in that our sample was slightly higher attaining. We don't really know the impact of that on the findings, but it is an area where actually this could influence the results that we got. The one thing I think we really need to emphasize at this point is how grateful we were to the pupils and the schools that took part in PISA. It was their hard work, it was the students that took these assessments and the questionnaires, and it's a lot of work for schools, and it's a lot of work for pupils, and without this data, we couldn't be able to look at how we're doing and to reach these conclusions and make change and influence things going ahead.

Stuart Cadwallader 18:55

Yeah, I completely echo that, because obviously the students don't get their own results back. It's not that's not the nature of the assessment. The assessment is kind of these sort of large-scale education systems, but obviously they're contributing massively to understanding of how education is working nationally and internationally. So yeah, we're extremely grateful for their contribution to the research.

Joe Bullough 19:17

Well, it's really important to relay that thanks, but thank you so much. It's a real pleasure to have you on the podcast today, Jenny and Stuart. Thanks for joining.

Jenni Ingram 19:25

Thank you.

Stuart Cadwallader 19:26

Thank you very much.

Laura Molway 19:27

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