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CPL Podcast: Teachers as Researchers K-12

Host: Carly Boreland
With: Dr. Les Perelman

INTRODUCTION:
You are listening to the JPL Podcast from the Centre for Professional Learning. Here's your host, Carly Boreland.

Carly Boreland:
Welcome to the JPL Podcast for the New South Wales Teachers Federation Centre for Professional Learning. I'm Carly Boreland, and I'm the editor of the JPL. Today, we're in part two of our series with Dr. Les Perelman from the United States. And in this section, we're going to be discussing teachers as researchers and why teachers approaching their work as intellectual work and as being researchers themselves can be so important for improving our students learning experiences. Les, welcome.

Dr. Les Perelman:
Thank you, Carly, for having me.

Carly Boreland:
And I should say welcome back and we are happy to have you here again with us. This time, we're going to stick with writing because that's your expertise, but the way teachers can improve their own practice and engage in research themselves. And Les, can you tell us a bit about how you come to care so much and come to the conclusion that teachers as researchers is really important?

Dr. Les Perelman:
I think it comes from the fact that, if you think about most professions, think about medicine. Medicine doesn't have outside social scientist come in and do their research for them. Medical doctors do their research. And that's true of most professional disciplines. And I think it's absolutely essential that we do that for our discipline because we know what the discipline is supposed to do, we know what works, and more important than that, we know the questions we want to ask. To quote or to paraphrase Carl Campbell Brigham, the person who created the SAT and then later repudiated it, "it's easier to teach people of culture testing than it is tester's culture".

Carly Boreland:
That's a really important and timely lesson I think at the moment in education not just in Australia but in I suppose the English-speaking world. There's a big emphasis on what works and on telling teachers what the evidence is that they should then go forth and implement. But it sounds like you're talking about a slightly different approach?

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Dr. Les Perelman:
Right. I'm talking about an approach, it's been used in the United States and there is this organisation, the National Writing Project, nwp.org, where they encourage and get grants from various agencies and foundations to do research. And it's teacher-centred. They have their own devices, and they're creating more and more different instruments to evaluate writing precisely because then teachers can figure out, what are the questions that should be asked and then how are we going to answer them? What kind of data is the important data to get? How are we going to evaluate that data in a way that's really a valid way? And it's not having readers from any discipline read 20 to 30 essays an hour.

Carly Boreland:
OK, Les. So, can you take us sort of baby steps, I suppose, to begin with, not because teachers haven't been to university. They've obviously worked in academic and intellectual ways before they were teachers. Can you just help us with, what are we talking about when we talk about doing research? What's the general process? And can you help us out with validity and reliability as well?

Dr. Les Perelman:
Absolutely. Well, first of all, there's the concept of the construct. We can think about writing, but writing is an abstract term, and we have to operationalize, in some way, what that construct of writing is so we can measure it.

Carly Boreland:
So, we need to make it real?

Dr. Les Perelman:
Yes. And at the same time, we want it to be what's called a construct relevant instance of writing not construct irrelevant. And I mentioned in the previous podcast the idea of the old SAT question of, you have 25 minutes to answer 'is failure necessary for success'? That's a perfect example of a construct irrelevant context because no one is ever asked to write on those kinds of situations in the real world. No one ever gets an email from their employer saying, "Is failure necessary for success? Get back to me in 25 minutes [laughter]."

Carly Boreland:
And while we're on that thinking about something that is real and measurable, it doesn't have to be countable, does it?

Dr. Les Perelman:
No. And in fact, some of the worst tests that I've seen, and that includes the NAPLAN, have countable elements wherein the NAPLAN to get a high spelling mark you have to have 10 difficult spelling words and that has nothing to do with real writing. At the same time, there's a difference between countable and markable. Where, for example, oftentimes people use one to five or one to six scales. I tend to

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favour one to six scales because it forces people to make a decision between the upper half and lower half. If you use an odd number scale, you'll end up with more in the middle. If you use a one to five scale, you'll get lots of threes because it's safe. But what you want people to do is think about as yes or no. Does the person achieve the task? Yes. Does the person not achieve the task? No. If you have a six-point scale, if they achieve the task, it's a four, five, six. And then you say, did they barely do it, did they do it, or did they do it well? And those give you the numbers four, five, and six. And if they don't achieve it, did they almost achieve it is a three. Did they solidly not achieve it? Or, one is they don't even get close. These can be for various kinds of traits. And I'll go through the whole process, but first, let's get to these important concepts.

OK. Once you have identified a construct, you have to say, "What is a valid way of measuring the construct?" So, for example, if you are testing someone if they drive a car you take a driving test where you drive a car. You don't have them take a multiple-choice test. We hope not, that the people out there driving just got there by taking multiple-choice tests. And then there are different kinds of validity. You can talk about construct validity, which we just talked about. We can talk about content validity which is close to face validity (that the things being measured are really the kind of content that we want). We can also talk about predictive validity, where it predicts other outcomes, or it correlates with similar kinds of activities. So, for example, oftentimes tests are saying like the tertiary 12-year tests in Australia are essentially tests to see if someone is going to be successful at university.

Carly Boreland:
Right. Les, I've heard of a description of understanding reliability and validity as a kind of target. I might describe it to you, and you can tell me I'm wrong, but it might be helpful as well as a bit of a visual. So, I've heard of it as say you've got a target like when you're doing archery and you fire arrows and they scatter all over the target. One goes in the centre, it's a bulls-eye, but they kind of go everywhere, and they're sort of scattered around the place. Then, there's ones that are, say, off-centre but all off-centre. So, consistently off-centre. And then there's some that are all in the bulls-eye. And so, the ones that are all in the bulls-eye would be valid and reliable.

Dr. Les Perelman:
Absolutely. And in fact, I have a PowerPoint slide that has a bulls-eye in the slides and you're exactly right. But the whole point is what you have to be worried about, especially oftentimes with psychometricians, is they're satisfied with the second case where all the arrows congregate together but far away from the bulls-eye because they love reliability and you can have something that's reliable that's just not valid. A classic example is in the 19th-century people measured people's intelligence by phrenology by measuring brain size or skull sizes. You can get real exact measurements - it's very reliable - it just has nothing to do with intelligence.

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Carly Boreland:
And so, the reason we're talking about this is not to scare teachers away from undertaking some research themselves in a classroom situation but just to inform people so that they understand what they're doing and maybe also so that they're not confused or distracted, or worse misled, by research by non-teachers.

Dr. Les Perelman:
Yes. I think actually teachers are going to instinctively known what validity is. And I think what this discussion is about is to steer them away and to give them language to critique studies that are invalid, although they may be reliable.

Carly Boreland:
And so, so often I suppose questions are asked that are able to be reliably tested, which doesn't necessarily mean that they're going to actually mean anything for our students, or be helpful to us.

Dr. Les Perelman:
For example, we already know that external spelling tests and external grammar tests correlate almost not at all, or have very little correlation with overall writing ability.

Carly Boreland:
And sorry again to go way back to the basics but can you help us with what correlation is when we're talking about research?

Dr. Les Perelman:
OK. OK. Correlation means that one thing varies with another thing. It's not causation because one thing can cause the other thing and you don't know that, but you know that they move in the same direction.

Carly Boreland:
Essentially, in the social sciences when we're talking about teaching, it's hard to isolate cause at school.

Dr. Les Perelman:
Right. As opposed to the physical sciences where you can oftentimes isolate variables, you can't take human beings and put them in boxes. I hope not.

Carly Boreland:
And so, I guess we are often concluding that it depends on the circumstances.

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Dr. Les Perelman:
Right. But even when you look at this, I think if you have a large enough sample or if the experiment is repeated enough-- again in the United States National Writing Project has I think done a very good job of having teachers work together in different classrooms in different states to replicate experiments. And again, if you have an experiment and try it out and get a result and get other teachers to try that same experiment. One of the things that I think is very useful for teacher development and should be encouraged by school administration is as teacher researchers participating in marking sessions should be given professional development credit. When I ran a program at MIT, we paid our staff extra money - and actually, fairly significant money - to encourage them to come and mark. Because I don't think there's any better professional development than having people get into a room and talk about writing and what is good about a piece of writing and what needs work on a piece of writing. Real student writing; not abstraction. And I think again it should start at lower years as well and become part of the culture. And it should be initiated from above. It should, I think, be a grassroots movement.

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Carly Boreland:
And so, when you're talking about teachers trying to replicate studies the point is that they firstly think that it's worthwhile doing for their class. And then they try and recreate what's already being done and then talk about whether that had the same outcome or different?

Dr. Les Perelman:
I'll give you an example. Let's say a teacher thinks of a new way of teaching argumentation. I'm not going to tell you what the new way is, but we can just say they have a new method. The teacher tries it out in his or her classroom and notices that the argumentation is much better. So, he or she talks to colleagues and a few of the other colleagues try it out and they get the same results. Well, if they go to some other schools or people they know and maybe have four or five other classes write the same assignment and then all get together and, as a collective group, train on a training set of essays to give anchor scores let's say on that six-point scale for argumentation or, as well as maybe other traits, such as organisation and maybe an overall holistic score. I'm a big believer that it's important that before you give trait scores you give a holistic score for the simple reason that people ratings things - works of art, music, reading - a holistic rating first before they start breaking it down into component parts.

Carly Boreland:
Well, its value and its meaning and its message are the whole, not the parts.

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Dr. Les Perelman:
Right. When you see a play that's excellent, for example, you give it a holistic rating and then you may say, "The direction was spectacular. The acting was very good. The staging was very inventive."

Carly Boreland:
And that becomes the common language of your reasoning for--?

Dr. Les Perelman:
Right. And then you might make those into categories or traits but the whole point is you don't do that first. And there's actually research that shows that when you use trait scoring that if you put a holistic score first the trait scoring becomes accurate for those traits simply because people aren't trying to put a holistic score into that trait score.

Carly Boreland:
This is probably a good time to mention that teachers who are keen on getting better at their own assessment practice could go to our education standards authority in New South Wales, so our NESA website, and there's lots of sample assessment and support materials there for assessing the HSC but also with those same principles through to the primary schools as well.

Dr. Les Perelman:
Right. And I would love a grassroots, locally based assessment plan that would be basically teacher initiated, teacher based, that could create knowledge. And I think the knowledge that it creates is going to be much more authentic, and probably much more valuable for teaching, than that which comes from the top-down.

Carly Boreland:
So, can we talk a bit, then about the top-down? So, teachers engaging with research is another part of it that's increasingly important in New South Wales where you might say read something that's been written by someone else, discuss it, and maybe do something with that back at your school. Can you help us a bit with what teachers should be thinking about when they're reading the work of another academic or when they're reading research? Things to look out for, or consider?

Dr. Les Perelman:
I think the single most important thing, and this is something I learned at MIT - it's the basis of science - which is scepticism. In other words, you start with the null hypothesis, and you basically say, "They have to convince me that this is true."
And then when you read the article, think about the questions to ask about the procedures. Did they explain everything? Are there things that are missing? There's a lot of very bad research out there and on my own work in machine scoring, I had to basically come up against very shoddy work that was used to try to promote machine scoring. And again, people would just see these studies and they would

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try to argue it. I've been a reviewer on the editorial board of two journals that deal with writing assessment. Sometimes you get research that is clearly being paid for by a publisher. Oftentimes, they're trying to do one thing, and that doesn't work, and they'll claim, "Well, this works, so this sort of shows that it's OK."

Carly Boreland:
So, you can still do the program, it's just that it has a different outcome to what we were expecting?

Dr. Les Perelman:
Right. You see, that's actually bad science because, in other words, that could be random chance. If it doesn't come out to what you're expecting, then you need to do another study. With the hypothesis. Oftentimes they don't. They just want to basically sell their product. And I think that's one of the other things to be asking, whose funding this?

Carly Boreland:
And increasingly I suppose a product doesn't just have to be a book you buy, or teaching materials you buy, but a product could even be a process. People could be selling an idea?

Dr. Les Perelman:
Oh, absolutely. There are people who sell ways of teaching writing: writing processes. Oftentimes the same kinds of things that are available for free, but they have their own, "Patented way of doing it," but it's not very different. And people end up making huge sums of money doing it.

Carly Boreland:
And could you just help us out with a couple of common things that you would say are bad science where there are common things that teachers could be alerted to in the method of a piece of research that's been done and then they've been presented with?

Dr. Les Perelman:
There's several things. OK. First of all, is the sample size large enough? Is the sample size representative? Are there other explanations for the result, other than the treatment effect given by the experiment?

Carly Boreland:
So, focusing on why did they get the outcome that they got?

Dr. Les Perelman:
Right. For example, I mentioned this before. In machine scoring, when you're scoring essays that are being read by 20, 30 essays an hour by readers, length becomes the primary factor. Well, machines are better at counting than human beings. Machines count really well. So consequently, you have to say,

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"Hmm. Could this just be word length?" And, if it is word length, did they give the data on word length for these essays? What was discovered ,and I discovered, is oftentimes they don't. And when you finally get the data for word length, you discover that you can get 80% of the predictive value just by counting the number of words.

Carly Boreland:
And any teacher would know that what we do, that's most valuable in schools, is often rarely counted in the kind of way that a machine might count it?

Dr. Les Perelman:
Well, it's even worse than that. Verbosity is what teachers work against. In other words, putting in more words just for the sake of putting in more words, not to create better, or more precise meaning, is something teachers teach students not to do and so this kind of research becomes subversive, which is why I think it's so important that teachers engage in their own research, which supports good teaching.

Carly Boreland:
How do teachers do this practically? Do they try and get involved with academics, typically, to get some ideas and help as well, or, is that not necessary?

Dr. Les Perelman:
Well, I think there are reference sites like you said. Again, the National Writing Project has some reference sites. The National Writing Project oftentimes has a model where a teachers' site works with the research university, which then gives you access to statisticians. And what's good about that model is the teachers are in control and the statisticians are not designing the test; they're helping with it, which is their proper place.

Carly Boreland:
And can you help us out with a bit of insight to, I guess, how universities work a little bit too? So, there are lots of people that work at a university and might even describe themselves as say an academic or something like that. I guess, what kind of qualifications or credentials would you be looking for, for someone to work with if you were going to be working with people who are from a university? Maybe degrees they've completed, or a background in teaching?

Dr. Les Perelman:
Well, I would say, again, it helps if they have a background in teaching, but I think if you're using them for statistical purposes a degree in psychology or educational psychology or oftentimes certain fields in education would be enough. What I think you want to do is get somebody who's supportive of teacher research as opposed to top-down research. The important thing to think about is, what are the questions that people are listening to this podcast have about their teaching? And a lot of them are what-if. What if I did this? And I would encourage them, as a first step, to experiment in their

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classroom. If they get something that they notice as a real success, then that's the time to try to convince other people to partner in their research. And I think all teacher research should be collaborative. Most research in the social sciences is multi-authored.

Carly Boreland:
And we would be really keen for teachers to see themselves as intellectuals. As being able to do this work without needing to have too many other people involved. That we are already intellectuals and our work is highly academic.

Dr. Les Perelman:
Absolutely. I think it's very important that-- again, to get to the analogy, medical doctors would not let statisticians run their experiments. Teachers are professionals. In many, many countries, teachers have equivalent status with medical doctors. And I think that's very important that teachers assert that status, and say that the posing of the research questions, what questions should be asked and how to answer them, should come from teachers.

Carly Boreland:
So, Les, we're saying teachers can do research and they should. And when they're thinking about doing research on their own classes and working with colleagues about teaching writing, especially, they should think about and find out about a research process and how that works. Really be aware of the problem and the constructs around what they're trying to find out. Think about something that they could measure. Think about something that is going to be reliable and valid in what they're trying to do so they can set themselves up for a successful research experience. Think about experimenting themselves with replicating other research that's already been done, or sharing their work with colleagues and seeing if that can be replicated. Making sure they spend a lot of time thinking about the questions that really matter, especially asking questions like, what if I tried this? I wonder what the outcome would be. If they do decide to involve other outsiders, they should be really aware of who's leading the process and make sure that the teachers and that themselves as intellectual workers are at the centre of whatever they're doing. Does that sound about right?

Dr. Les Perelman:
That sounds about right. And I'd like to end with one other point. They shouldn't be afraid of negative results. And this is in my own: sometimes we learn more from finding out that we couldn't prove our hypothesis than if we did and that's part of good research.

Carly Boreland:
And I suppose it's what we do next, that's the key to success. Les, it's been our pleasure having you here in Australia and in our studio. We really appreciate your time, and I think our listeners will have as well. Thank you.

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Dr. Les Perelman:
Thank you. I really enjoyed this conversation. As always, I enjoy being in Australia.

Carly Boreland:
You've been listening to JPL Podcast for the New South Wales Teachers Federation. I'm Carly Boreland, and I'm the editor of the JPL, and I've been speaking with Dr. Les Perelman about teachers as researchers and doing research in schools. To find out more and to listen to further podcasts you can visit our website at cpl.asn.au/podcasts.

CONCLUSION:
The JPL Podcast is produced by the Centre for Professional Learning and the New South Wales Teachers Federation. All opinions expressed in this podcast are those on the individual speakers and do not necessarily represent the views of their employer or associated organisations. The host was Carly Boreland; technical direction by Jason Nicholas.

Dr. Les Perelman **is an internationally recognised expert in writing assessment and the application of technologies to assess writing. He has written opinion pieces for The Boston Globe, The Washington Post, and The Los Angeles Times. He has been quoted in The New York Times, The New Yorker, The Chicago Tribune, The Boston Globe, The Los Angeles Times, and other newspapers. Dr. Perelman has been interviewed on television by ABC, MSNBC, and NHK Japan Public Television and interviewed on radio by National Public Radio, various NPR local stations, the Canadian Broadcasting Corporation, and the Australian Broadcasting Corporation.**

The President of the College Board has credited Dr. Perelman's research as a major factor in his decision to remove and replace the Writing Section of the SAT. Dr. Perelman is a well-known critic of Automated Essay Scoring. To demonstrate the inability of Robo-graders to differentiate writing from gibberish, he and three undergraduates developed the BABEL Generator, which produces verbose and pretentious nonsense that consistently receives high marks from AES machines.

Dr. Perelman received his B.A. in English Language and Literature from the University of California, Berkeley, and his M.A. and Ph.D. in English from the University of Massachusetts.

After a three-year postdoctoral fellowship in Rhetoric and Linguistics at the University of Southern California, Dr. Perelman moved to Tulane University where he served as an Assistant Professor of Rhetoric, Linguistics, and Writing; Director of First-Year Writing; Director of the Writing Center; and a Member of the Graduate Faculty.

For the next twenty-five years Dr. Perelman was Director of Writing Across the Curriculum in Comparative Media Studies/Writing at the Massachusetts Institute of Technology and served as an Associate Dean in the Office of the Dean of Undergraduate Education. He was Project Director and co-Principal Investigator for a grant to MIT from the National Science Foundation to develop a model Communication-Intensive Undergraduate Program in Science and Engineering. He served as Principal

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Investigator for the development of the iMOAT Online Assessment Tool funded by the MIT/Microsoft iCampus Alliance.

Dr. Perelman has served as a member of the Executive Committee of the Conference on College Composition and Communication, the post-secondary organisation of the National Council of Teachers of English, and co-chaired the Committee on the Assessment of Writing. He is currently a member of the editorial board of Assessing Writing.

Dr. Perelman has been a consultant to over twenty colleges and universities on the assessment of writing, program evaluation, and writing-across-the-curriculum. Dr. Perelman has served as a consultant for writing program assessment and development for the Fund for the Improvement of Postsecondary Education of the U.S. Department of Education and for the Modern Language Association. In 2012–2013, he served as a consultant to Harvard College and as co-principal investigator in a major two-year study assessing the writing abilities of undergraduates at the college.

Dr. Perelman co-edited the volume Writing Assessment in the 21st Century and he is the primary author of the first web-based technical writing handbook, The Mayfield Handbook of Technical and Scientific Writing. He has published articles on writing assessment, technical communication, computers and writing, the history of rhetoric, sociolinguistic theory, and medieval literature, and he co-edited The Middle English Letter of Alexander to Aristotle.