

Research for Teachers: Pure and Applied

Llewelyn Richards
Editor: set,
NZCER

For the Joint Conference of AARE and NZARE
Deakin University, 22-26 November 1992

Introduction

Researchers complain that teachers don't keep up with research. Teachers complain that research is not worth reading.

set, which I edit, with Peter Jeffery, is a twice yearly packet of articles on educational research specially prepared for teachers.

In choosing the material to go into set I have found that certain types of "educational research" are quite inappropriate - teachers are just not interested in the results. Is this due to wilfulness or shortsightedness or thickness on the part of teachers? Or is it due to strength of purpose, or professional focus, or cerebral/neural density on the part of the researchers? Or is it due to misunderstandings about what research is? Sometimes it is easy to see why teachers are not interested. For example, take what I call, somewhat narrowly, policy research.

EXAMPLE 1. At the first level of subtlety

(a) An educational bureaucracy wants to know how many children are learning

the clarinet in order

to set aside the correct amount to pay the tutors. This about the effects of a policy.

(b) It requires simple head-counting research.

(c) Teachers don't want to know the results, it won't help their day to day struggle a whit.

EXAMPLE 2. At the next level of subtlety

(a) The bureaucracy wants to implement a policy of giving more musical opportunities so it needs to know how many children want to learn to play the clarinet. If more want to learn than at present, then new tutors will have to be found, or trained, more money found to pay them, more clarinets bought, maybe more music rooms built. The research is about the effects of new policy.

(b) The research requires a simple questionnaire and a simple sample.

(c) Out-of-work clarinet teachers will be interested in the results, as workers, otherwise this has nothing in it for teachers as teachers.

EXAMPLE 3. At the next level of subtlety

(a) The bureaucracy wants to know the effects of putting different policies into practice with a view to recommending one or another. Would it be best to put money into free clarinets, or more tutors, or correspondence courses, or compulsory lessons, to encourage withdrawal from other lessons or lessons after-school, to provide synthesizers instead...? This research is about the effects of possible policy.

(b) More extensive headcounting and a more complex set of questionnaires will be needed, and perhaps some more complex factor analysis at the end.

(c) Teachers as teachers will still be uninterested, though their careers may be profoundly changed by the policy decisions made as a result of this research.

Note that even a clarinet tutor is not interested in this policy research from a teaching point of view.

His or her job may be affected, his or her bargaining position, lifestyle, income, marriage, children,

politics... But teaching not at all. Is it wiser to introduce dotted crotchets before triplets, or after, or

together? Is tonguing more tricky than breathing? Will alternative fingering interfere with expression

though aiding rapidity? Will the embouchure look after itself? What can one do with the tone deaf

pupil? With the lazy pupil? With the disruptive pupil? Is 1/2 an hours practice a day better than 1

hour every second day? These are questions the clarinet teacher wants answers to.

After 20 years of reading educational research I am driven to the conclusion that almost all policy research is not, by its very nature, for teachers, even if teachers, pupils or classrooms are its subjects. Perhaps I should have realised much earlier. Many teachers become administrators, and all are employed by someone, so policy is important. But it isn't, in my book, for my magazine, educational research. Those researchers who want to help teachers teach can put away all their questionnaires and their headcounting algorithms, and possibly all their sampling formula. On the whole, teachers want (and need) research on learning and teaching. It seems pretty elementary doesn't it?

A quick look at what researchers attending this conference (and some other researchers) are doing, shows that teaching and learning are pretty low on the list. In Table 1 are some head-counts I have just done. My sources were AJE and NZJES back to 1987 and the two combined NZARE/AARE Conferences. A quick scan of the titles and abstracts and I sorted out three categories: (1) those that dealt with places of formal education, with learning theory and practice, with teaching theory and practice; (2) those that involved collecting data, massaging it and thus giving information useful in the formation or implementation of policy; (3) those - being all the rest - which treated topics philosophically, mathematically, or historically, and the those which were polemic or advocacy, or arose out of despair. The third list was by far the greatest, and another analyst could tease it out, produce percentages, and write wise words about the state of assessment theory, educational politics, historical blinkers, etc., in the world today.

The quick conclusion is that only a quarter of what "educational" researchers are researching is of interest to teachers. There may be some historical, political, philosophical, assessment, policy, issues which it would do them good to read, and a few of these get into set. But only 60 of the 380 bits of "research" presented here are of any direct use to the education that goes on in education systems. Funders of education research are getting harder and harder to find. Maybe what so-called "education"

researchers do, or don't do, is part of the problem.

Pure and Applied

It may be maintained that the research which I am pushing aside as useless to teachers (and therefore, not "proper" educational research) is not APPLIED research but is in fact PURE research. Pure research is absolutely vital stuff - we wouldn't have the glues that held together my jet from New Zealand if it wasn't for the work of nuclear physicists on electron shells. If the research which the editor rejects is pure research, it is not surprising that teachers find it too difficult, just as most of us here do not attempt research into sub-atomic physics, and often wonder if we have grasped the first principles.

Pure research in the solid sciences involves theories and attempts to disprove or refine them. Very few of the papers by educational researchers I have looked at, make a very good fist of stating or disproving or refining. There are often attempts to do this in papers which mix politics and education, but even those which pile up observations and other data and look for universal explanations are handcuffed to a time and place and a culture.

EXAMPLE 4. The handcuffs are obvious in such policy papers as an excellent one I read on beginning teachers in rural Queensland. The data from questionnaires and interviews and policy documents and departmental statistics all added up to a (chilling) picture of (inadequate) help for those teachers then and there. The only pure science conclusion, however, is that if you were to recreate 1986 Queensland (heaven forbid) in 1992, you could repeat the questions etc., and find out if the conclusions held up.

EXAMPLE 5. Another, more recent paper looked at two groups of girls doing PE. Data was piled up from many measures. The researcher searched for some factor which would clearly characterise the groups. But even if one had been found, it would still have been tied to that culture, that age group, that part of the world. The author recommended different teaching for different pupils - and that, though it looks like a pure science conclusion - did not in fact flow from the research data.

EXAMPLE 6. Gough, Tunmer, Nicholson, and others have looked very closely at how children faced with the English language and the Roman alphabet, learn to read. Their conclusions come in part from testing the theories of Smith and Goodman, in part from experiments and observations. In as much as this is work about one language and one orthography it looks pretty pure, but it often appears to make claims about how the mind works. Unfortunately it cannot do this because it ignores other languages and other systems of writing which preclude "sounding out" (Chinese is the main example).

EXAMPLE 7. Is it pure research when Willis, or someone in the same tradition, piles up observations and statistics about working class pupils and suggests that theories about middle-class capture or the acquisition of cultural capital are thereby proved or disproved? From a sociological/political science point of view this is getting pretty close to pure research. But again it is time, place, culture bound, and the only lesson for teachers is that if all the poor were made rich (and middle class) some discipline problems would (probably) disappear. A lot of research doesn't get into set because it fails to offer any solution to problems except, 'make everyone rich.'

Pure (True-blue Educational) Research

Is there no pure research worthy of the name, then, into learning and teaching? There is quite a lot; but it is not being done by "educational" researchers.

EXAMPLE 8. Research on memory. Memory is a vital part of learning. How the mind remembers, the different types of memory it manages, the ways in which memory handling and memory capacity change as we grow.... All these are absolutely essential bits of knowledge for the teacher. Most teachers have, I suspect, pretty elementary theories about memory, but they are using those theories every day, as they teach, expecting, against a lot of evidence, that their techniques will result in things (and actions) being remembered. Research into memory is getting exciting and useful results but this sort of pure research is carried out by psychological and medical researchers.

EXAMPLE 9. Research on motivation. Why do we do some things and not others? How do actual effects, such as getting a cross for your answer "14" to the sum " $2 \times 3 + 4 =$ " change your actions? How is it that rules, such as "multiplication before addition" change our actions better? Which is more efficient? Lasting? Effective? This sort of pure research, again exciting and most important for teachers, is solely in the hands of psychological researchers.

EXAMPLE 10. Research on learning. What is the effect of telling someone the answer to a problem they are slow to solve? This is an absolutely vital question for teachers. Maybe we have been wasting our time telling our pupils the answers when they get the question wrong, or don't get an answer at all. But no educational researchers are on this trail - again it is the psychologists. There are some educationalists working on learning (thank goodness) but mostly on culture, time and place bound examples. The pure, basic, research is not seen as "educational".

EXAMPLE 11. Research on mental capacity. Are people born with limits to some of their mental abilities? We all recognise the gross differences, the IHC, the maths whizz-kids. But can one inherit a difficulty with, say, spelling? The geneticists are working with twin studies on such problems as these. What about cognitive deficits, such as autism? Medical researchers are working on these.

All of these examples come, of course from set articles. I have found it very necessary to go outside "education" research to find material teachers need to know to improve their teaching. There are exceptions, and I pounce on these with great eagerness. They are usually a mix of pure and applied research, use several research techniques and cross discipline boundaries.

EXAMPLE 12. Research on schooling and learning. (I was going to say, "research on the educational effects of educational delivery systems"; you may find the jargon version more explanatory in this case.) What sort of systems are possible? The range is enormous, from doing no teaching, to one-to-one teaching, to TV programmes to millions. Then, in school systems, there is a range from grouping by age (or sex, or colour, or first initial, or money, or star sign, or test results) to no grouping at all. Then

there is rigid promotion by age, or test results, or "readiness", or when the learner decides to move on.... I have seen one researcher slashing through this jungle; her work began with a demographic investigation, moved on to an analysis of the mathematics of assessment and then involved a study in anthropological-style. This sort of research is particularly rare; there seems to be very little multi-method, multi-discipline and team research going on.

EXAMPLE 13. Research on learning interactions. The best work I know in this field is by Adrienne Alton-Lee, urged on by Graham Nuthall, in Christchurch. Every year I ask Adrienne for more from her continuing investigations which collect every scrap of class work by 5 typical children, matches this with every scrap of conversation the children have and information on home background, etc. Tests are before, after and a year after the series of lessons being examined. From this enormous mound of data lots of insights are emerging on the way, such as proof positive of how curriculum influences sexism, proof positive of how racism is expressed subtly and the damage it is doing. But the main drive is towards a theory of the prerequisites and methods needed for lasting learning to take place. Each year I get told the theory is not ready yet. A first article, back in 1983, was a cracker, and possible the best article ever published in set, full of insights and tremendously useful to teachers, but the new discoveries mean the theory is being refined. The pace seems right to me, but I'd love to be the first to publish this research. Maybe next year...

Applied (True-blue Educational) Research

Although the examples I have just given (excluding parts of No.8) are of pure research, there are plenty of examples of time, place and culture bound research projects which do help teachers. Some of these involve simple head-counting and observation and a percentage or two and can be handled by teachers themselves, with spectacular results in the teachers's own classroom.

EXAMPLE 14. The pre-school thought that the book corner seemed under-used. Observations, note-

book in hand, over a full session showed that the corner was used, but no one stayed long. The reason turned out to be that the corner was sited near the passage to the loo, and the kids, and helpers, didn't find that nice. The corner was shifted, books were being read again.

EXAMPLE 15. A teacher gave her new entrants an exercise book and ball-point on their first day at school and asked them to write. None of the children were put off by this approach. She kept a log of each child's writing and found that half of what she had been going to teach was unnecessary repetition of what they could do already. A lot of wasted time and frustration on both sides was avoided.

EXAMPLE 16. A secondary teacher kept a diary of how each day had gone, particularly her own decisions. She discovered that all her decisions, no matter how instantaneous or off-the-cuff, were rational. Some had emotional content, and some were not always for the best, but they were all justifiable. A cheering discovery. She worked out ways to make the hundreds of quick decisions every teacher has to make each day, even better, and less stressful.

EXAMPLE 17. Many teachers have collected lists: of what their pupils are reading; what sports they play; what pocketmoney they get; what their hopes and fears are; what homework they get, what homework they do; what subjects they like; what TV they watch; and so on, and on. It is all good stuff and takes the guesswork and prejudice out of judgements, estimates, assessments, demands.

Conclusions

1. Teachers expect too much of "education" researchers - most of them are not doing research of relevance to teaching and learning.
2. Researchers expect too much of teachers - teachers haven't the time to sort out the conclusions that apply to them in the few relevant papers. They certainly do not have time to sort through the thousands of papers by researchers in the medical, genetic, demographic, anthropological, psychological, fields, or even to sort out and ignore those by that majority of

"educational" researchers who are busy with philosophy and history and assessment and politics and policy. No wonder they ignore the lot.

3. The in-service teaching of simple statistical method and observation techniques, followed up by a dose of encouragement, would boost the morale and usefulness of teachers no end.

4. Education systems (Departments, Ministries, etc.) will go on funding policy research, but cannot be expected to do so if it is likely to be used against their political masters. Therefore, independent bodies such as universities must do some policy research too. The choice of what to do should be governed by that fact. Do the socially important stuff no one else will do. (It's not pure research, you know, so don't be scared of being socially useful.)

5. Pure research is very important to teaching. If "educational" researchers are not going to do it (and very few of them are equipped to do it - questionnaires and regression tables are not enough) then it would be wise for someone to finance a continuing programme that tracks down and data-bases and publicises teaching-useful research from other fields. I have given examples, but these I lit upon unsystematically; there must be lots more out there.

6. University "Education" departments and independent research establishments should discuss how far away from teaching and learning they want to get. I often wish I had space in set for some fine historical writing from university educationalists; it can be witty and full of insights, especially when old policies reappear in drag on the political stage. Then there are the philosophical concept-busting articles I enjoy because of my philosophy background. And the "shock-horror" tales of fatuousness-become-policy as politicians succumb to doctrinaire simplifications. And there are the pin-head twirlings of psychometricians. These are goodish, in their own way, but are they contributing to better teaching and learning?

7. Is one quarter of all research time enough?

Table 1
Types of Educational Research in Australia and
New Zealand, 1987-1991

Source	Research into		
	Schools and Learning and Teaching	Topics which throw light on policy	Philosophy, Assessment, History
NZJES			
Vol 23	2	6	7
24	3	2	8
25	1	5	4
26	5	2	6
27	2	2	4
Tot	13	17	29
%	22.03	28.26	44.83
AJE			
Vol 32	3	6	11
33	4	9	8
34	3	15	5
35	3	6	6
36	2	1	4
tot	15	37	34
%	17.44	43.02	39.53
1987 Conference			
NZ	22	29	25
Aus	35	40	37
tot	57	69	62
%	30.32	36.70	32.98
1992 Conference			
NZ	15	14	48
Aus	62	78	184
tot	77	92	232
%	19.20	22.94	57.86
Total totals	162	215	357
Totals %	22.07	29.29	48.64



Paper Presented at the Joint AARE/
NZARE Conference, Geelong, 1992