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Evidence-Based Practice: On the Function of Evidence in Practical Reasoning

Abstract

There is a vast literature on evidence-based practice (EBP) in education. What function does evidence have in practical deliberations toward decisions about what to do? Most writers on EBP seem to think of evidence largely as quantitative data, serving as a foundation from which practice could and should be directly derived. In this paper I argue that we are better served by according a different and more indirect function to evidence in practical reasoning. To establish this claim I employ Toulmin's model of argumentation. On this model the evidence-as-foundation view amounts to evidence as data/grounds. The model also offers a different function for evidence, as backing of the warrant, and I argue in this paper that this is a more adequate understanding of the function of evidence in practical reasoning.

Keywords

Backing, EBP, evidence, grounds, reasoning, Toulmin model, warrant.

Tema: Erkendelse, viden og læring

Introduction

There exists a vast and growing literature on evidence-based practice (hereafter EBP) in education; hardly surprising given the status of “evidence-based” as a buzzword in contemporary educational debates (and also in e.g. medicine, military leadership and policy-making). In education EBP largely seems to have arisen as a government wish for better research bases to inform policy and practice; this has become known as the what works agenda.

It is not easy to characterize neither EBP nor the debate about it. There are different definitions, different perspectives, different opinions and some general unclarity, confusions and misunderstandings. The current educational “landscape” is dominated by a vocabulary consisting of concepts and ideas such as learning outcomes, testing, measurement, qualification, employability, accountability, effectiveness, competencies and predictability; here given in no particular order. Since schooling and education are considered successful when predetermined outcomes have been achieved, education makes excessive requirements of assessment, measurement and documentation. EBP is generally seen as belonging in this picture; to know what works in order to maximize the probability of attaining the goal.

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The critics claim that all these concepts taken together make for a very narrow and highly instrumental conception of education.

This criticism of the big picture of contemporary education is, to my mind, both pertinent and justified. But it cannot automatically be assumed that it thereby applies to EBP as well; EBP in itself is neither necessary nor sufficient to produce the educational landscape outlined above. Whatever else one might disagree about concerning EBP, there is widespread agreement about at least one part of its “core”: EBP concerns use of the best available evidence to produce good results for both client and society. “Client” is here a generic term that covers patients, students and any other clients professional practitioners might have. There is, of course, much debate about what constitutes the “best available evidence” and about how “good results” should be interpreted and judged. In this paper I shall inquire into one delimited issue in this large complex, namely the question of how research evidence can enter into teachers’ deliberations about what to do in their classrooms. That is, I shall inquire into the possible functions that evidence might perform in teachers’ reasoning toward a decision about what to do. As we shall see, evidence is largely assumed to play the role of a foundation for practice. I shall argue that evidence is better thought of as performing a different, more indirect function, and to identify this function I propose to employ Stephen Toulmin’s model of argumentation.¹ The role I shall propose deviates substantially from the role ascribed to evidence by most writers. I by no means wish to intimate that the role I shall advocate is the only role evidence can play; it is a role that emerges when we employ this particular analytical tool. First I shall look briefly into certain aspects of the EBP debate relevant to my issue; then I use Toulmin’s model of argumentation to tease out the problems with the “foundation” view and to argue for what I take to be a more adequate role for evidence.

A brief sketch of the educational EBP debate

the overall framework for this paper is practical reasoning. Reasoning, Robert Audi² says, is a common response to problems we care about. Practical reasoning comes in many shapes and forms, but it is generally agreed that it concerns what one should do, not what one should believe. Practical reasoning comprises a large domain in its own right, but I am only going to establish it here as an overall frame for my discussion. I am going to use Toulmin’s model as a model of reasoning, because I am interested in finding an adequate role for evidence in practical reasoning and to the best of my knowledge the general literature on practical reasoning will not help me do that. But it is important to make clear at the outset that what I am after here is teachers’ practical reasoning toward a decision about what to do.

1 Stephen E. Toulmin, *The Uses of Argument. Updated Edition* (Cambridge: Cambridge University Press, 2003). First published 1958.

2 Robert Audi, *Practical Reasoning* (London: Routledge, 1991).

While practical reasoning is the framework for my discussion, the content is EBP and the possible functions of evidence. Much of the EBP debate in education has a rather adversarial character. There are adherents and there are critics, and (at least until recently) the critics seem to far outnumber the adherents. It is generally agreed, though, that EBP from the beginning has had strong political overtones in the form of government wishes to improve the results of the educational system. This is of course a legitimate government concern. By extension, it is equally legitimate for governments to be concerned with how the desired results are best achieved; that is, to ask for knowledge of what works. To know if your strategy works you must be able to measure its outcomes, and there can be no doubt that measurement in schools have taken on quite unprecedented proportions in recent years. Critics argue that this is misguided because it narrows education to training and instruction and fails to do justice to broader cognitive processes that are not easily measured, such as e.g. rational reflection and appreciation of art. I think the critics have a very good point here; all educationists have good reason to worry about the thorough-going instrumentalization of even higher education that we see today. But these particular worries mainly concern the objectives of education and our understanding of what education is all about, and in this paper I am going to be concerned with the possible functions of research evidence in the practical deliberations of teachers and other practitioners. I should like to make it clear that my reasoning examples are fictive. They are thus only illustrations of how such reasoning can proceed, not empirical examples of how practical reasoning actually happens.

The kick-off for the debate was David Hargreaves' now (in)famous TTA lecture in 1996.³ Through a comparison with medicine he argues that teaching is not a research-based profession; that a radical change in the kind of research done is needed, and that the organization of research must be changed accordingly. Educational research, Hargreaves insists, should serve to improve practice. This requires research which,

[...] (i) demonstrates conclusively that if teachers change their practice from x to y there will be a significant and enduring improvement in teaching and learning and (ii) has developed an effective method of convincing teachers of the benefits of, and means to, changing from x to y.⁴

This will naturally, he thinks, lead to a dramatic increase in evidence-based research, and most of this will be quantitative evidence gathered using randomized controlled trials (RCT).

Hargreaves is one of very few educational researchers I have come across who is enthusiastically in favor of EBP, although he is not completely alone. It is a constant theme for

3 David Hargreaves, "Teaching as a research-based profession: Possibilities and prospects" (London: Teacher Training Agency Annual Lecture, 1996).

4 Hargreaves, "Teaching as a research-based profession," 5.

him that educational research should improve the performativity of teachers with respect to outcomes; outcomes generally perceived as measurable outputs. For this reason, he is a strong advocate of research into practical issues. To gather evidence about what works in what circumstances is the whole point of evidence-based research, he maintains.⁵ This kind of research is useful for policy-makers, school developers, headmasters and teachers and could thus have a *direct* impact on practice. Teachers, Hargreaves states, want to know *what works* – only secondarily are they interested in understanding the *why* of classroom events.

Virtually every aspect of Hargreaves' views has been attacked. He has become, I think, as so closely associated with EBP that criticism of his views is seen as tantamount to criticism of EBP. His comparison of education to medicine is found wanting⁶ and his description of how research is funded is problematized.⁷ More substantially, his views about the nature and mission of educational research are criticized by many as being too narrow and instrumental but also too optimistic regarding what research can provide.⁸ Most importantly for my purposes in this paper, his (implied) views about the teaching profession are also criticized, generally by the same people who criticize his views on educational research. It is in the context of the profession that we find the issue which I am going to concentrate on, namely professional judgment; most notably the part of it that consists of practical deliberations. As we shall see, some of the EBP critics worry that EBP means a more or less complete displacement of professional judgment and argue that we for that reason (plus other additional reasons) should reject EBP altogether. And just for the record, it is of course possible to voice criticism of EBP without referring to David Hargreaves. For example, Bronwyn Davies⁹ largely sees EBP as being part of a managerial agenda to remove power from practitioners to bureaucrats.

We can see from this brief sketch that in education the EBP debate branches off in several different directions. It is not obvious that all writers share the same definition of EBP, and it may well be that EBP gets an unfair proportion of criticism simply by being part of what I above called the current educational landscape. In the next section I shall expand on a small selection of these criticisms; thus leaving many interesting issues untouched. I shall

5 David Hargreaves, "Educational research and evidence-based educational practice – a response to critics," *Research Intelligence* 58 (November 1996), 12-16.

6 See for example Martyn Hammersley, "Educational research and teaching: A response to David Hargreaves' TTA lecture," *British Educational Research Journal* 23, no. 2 (1997): 141-161; Nigel Norris, "Professor Hargreaves, the TTA lecture and evidence-based practice," *Research Intelligence* 57 (July 1996), 2-4

7 For example, John Gray, "Track record of peer review: A reply to some remarks by David Hargreaves," *Research Intelligence* 57 (July 1996), 5-6

8 For example Gert Biesta, "Why 'what works' won't work: Evidence-based practice and the democratic deficit in educational research," *Educational Theory* 57, no. 1 (2007): 1-22; John Elliott, "Making evidence-based practice educational," *British Educational Research Journal* 27, no. 5 (2001): 555-574 .

9 Bronwyn Davies, "Death to critique and dissent? The policies and practices of New Managerialism and of 'evidence-based practice,'" *Gender and Education* 15, no.1 (2003): 91-103.

argue that there are misunderstandings and confusions here which can be unraveled if we use Toulmin's model of argumentation.

A Toulminian analysis of the function of evidence

Hargreaves paints in broad strokes and does not really discuss the question of *how* research evidence is to be used in practice or in practitioners' deliberations over what to do in their practice. In fact, this question seems to be largely missing from the debate – there are hints and suggestions, but to the best of my knowledge no in-depth inquiries. In his TTA lecture Hargreaves approvingly describes evidence-based medicine (EBM) as often having a *direct* relevance to improvement of practice, and laments the view which says that research only has an *indirect* influence on policy and practice. He does not entirely agree with himself, though; other times he says that evidence should *inform* practice. However that may be, research should provide evidence of what works in what circumstances. By *what works* is meant the achievement of intended effects and/or the solving of problems.¹⁰

I shall look into some related but separable issues concerning the uses of evidence in practical deliberations. Before I embark upon my analysis I shall present the essentials of Toulmin's argument model, adding more details as they become necessary in the course of my discussion. The model is complex and sophisticated. Toulmin begins by distinguishing between the *claim* or conclusion (C) that we are seeking to establish and the facts we appeal to as a foundation for C, called grounds or *data* (D).¹¹ The question "How did you get there" draws attention to the step from D to C and how this step can be justified or bridged. Propositions that provide the justification for inferring C from D he terms *warrants* (W).¹² The warrant seems to me to be of great importance, yet sadly neglected in educational reasoning. It authorizes the sort of step we make, licenses the inference, as David Hitchcock¹³ puts it. Toulmin himself raises the question of the distinction between data and warrants, since the same sentence may in some contexts convey information and in other contexts authorize an inferential step. In any case, he says, the task of the warrant is to "register explicitly the legitimacy of the step involved".¹⁴ Warrants confer different degrees of strength on the claims that they justify; hence, we may need to use a *qualifier* (Q) to express this, e.g. necessarily, presumably, possibly. *Rebuttals* (R), linguistically expressed as e.g. "unless", refer to exceptional circumstances which undermine the general authority of the warrant. Both Q and R have a bearing on W; they comment on it, as Toul-

10 Ian Sanderson, "Is it 'what works' that matters? Evaluation and evidence-based policy-making," *Research Papers in Education* 18, no. 4 (2003): 331-345.

11 Toulmin, *The Uses of Argument*, 90.

12 *Ibid.*, 91.

13 David Hitchcock, "Toulmin's warrants," in *Anyone who has a view. Theoretical contributions to the study of argumentation*, ed. Frans van Eemeren, J. Anthony Blair, Charles Willard, and Franziska Snook Henkemans (Dordrecht: Kluwer Academic Publishers, 2003), 69-82.

14 Toulmin, 92.

min calls it. Next, we come to the question which is going to be central to my concerns; namely whether the warrant is acceptable at all. Suppose you insist that some C follows from data D, and somebody asks 'but why do you think that?' This is where the *backing* (B) of the warrant comes in: "Standing behind our warrants, [...], there will normally be other assurances, without which the warrants themselves would possess neither authority nor currency", Toulmin says.¹⁵ Following the lead of Milos Jenicek and David Hitchcock¹⁶ I shall argue that the concept of *backing* has the potential to clear up some of the fundamental misunderstandings about the functions of evidence in EBP.

"Based": evidence as data or grounds

First a brief note on *evidence*. The questions of *who*, *why* and *what constitutes evidence* are much discussed by both critics and advocates of EBP. The more basic questions of what evidence is and what the nature of the relationship between evidence and the claim is, are usually not addressed (but see Kvernbekk¹⁷ for a discussion). The established philosophical understanding sees evidence as something that supports a claim (belief, theory) or speaks to its truth value.¹⁸ In the educational EBP context, evidence is thought to speak to the effectiveness of a strategy or a method of teaching.

But how, precisely, is evidence to be used by practitioners? I shall begin by looking into the question of what it might mean for practice to be *based* on evidence. It is not obvious that "based" is captured by the standard meaning of evidence, summed up in the term *support*. In the EBP debate, a literal understanding of it seems to be taken for granted. Bronwyn Davies¹⁹ is a case in point. She thinks of "based" in terms of a base or foundation consisting of facts and/or (quantitative) data. I think she voices what a good many writers on EBP, critics and adherents alike, take "based" to mean but do not say explicitly: a foundation of data that are supposed to tell you what to do in practice. Davies herself is primarily interested in issues of power, and so focuses on the *who* question: who selects the evidence, who decides what is relevant, who defines what is effective and what counts as a success.

I think we can identify a general tendency to understand the evidence–practice relationship as one of *derivation*: practice could and should be derived from a foundation of evidence. The idea is that if you derive a practice, it should be pretty clear what you ought to do.

Teachers, like other practitioners, have to make many decisions about course of action. I have poor readers in my class – what should I do? My students lack motivation to learn history – what should I do? And how do I reach a decision about what to do? I grant that

15 Ibid., 96.

16 Milos Jenicek and David Hitchcock, *Evidence-based practice. Logic and critical thinking in medicine* (American Medical Association Press, 2005).

17 Tone Kvernbekk, "The concept of evidence in evidence-based practice," *Educational Theory* 61, no. 5 (2011), 515-532.

18 See for example Peter Achinstein, *The book of evidence* (Oxford: Oxford University Press, 2001).

19 Davies, "Death to critique and dissent."

the examples might be simplistic, but the chains of reasoning that lead up to the decisions surely are not. I think that most participants in the debate, both critics and advocates of EBP alike, conceive of the relation between evidence and practice as parallel to the relation between data and claim. Suppose a teacher who is concerned with the reading skills of his students makes any of the following claims: “I shall try Bowyer-Crane’s method for improving phonological measures” or “I shall ask my colleague what she did” or “I shall give them the same exercises that worked so well last year”. Even an (overly) simple example like this can trigger considerations that seem to be largely missing from the debate. First, C may not be immediately obvious, and we may want to ask the teacher where it comes from; that is, what the basis for the claim is. The teacher may then say that he has poor readers in his class, a statement that serves as data D. I think that much reasoning about what one should do in practice is set off by perceptions or felt problems such as this. But we do meet here with certain problems. First, at the outset more than one C may be inferred from the same data. Second, it is not obvious that this is the kind of data that would even pass for evidence in EBP – it is certainly not what Hargreaves has in mind. Third, the implied relation here is tricky ground. Many philosophers think that the relation of a claim to its putative evidence is one of support, not foundation.²⁰ Denis Phillips states explicitly that facts (evidence) cannot be regarded as a base from which theory, policy or practice can be inferred. Yet he concedes that we in some sense might say that data generate hypotheses, but only in an indirect way as a source of puzzlement. Whatever the (somewhat uneasy) relationship between foundation and support, the following is important to note: In some sense or other, data D comprise evidence of sorts, and they do provide the basis for C, in the sense that C is at least generated from it if not downright derived from it.

There are no detailed discussions in the educational EBP literature of what function one thinks that research evidence should have for practice. Quite naturally the term *evidence-based practice* makes people think of evidence as something on which practice should be *based*. That is to say, evidence performs the function of *data* or *grounds* (D) from which practice should be derived. Adherents presumably think this is a good idea, critics think it is a bad idea. Let us look at the critics first.

In a response to Hargreaves’ TTA lecture Martyn Hammersley throws doubt on the idea that teaching can be *based* on research knowledge. There are two main reasons for this. The first is that he thinks that the kinds of problems teachers mostly face are not open to research, since only “technical” problems are thus open. The second reason is that since teaching is practical rather than technical, “[...] it is a matter of making judgements rather than *following rules*”.²¹ In a similar vein, Gert Biesta describes the adherents to EBP (at least the most extreme of them) as “[...] those who think that research will be able

20 For example Achinstein, *The book of evidence*; D. C. Phillips, “Adding complexity: Philosophical perspectives on the relationship between evidence and policy,” in *Evidence and decision making. 106th NSSSE yearbook*, ed. Pamela Moss (Oxford: Blackwell, 2007), 376-402.

21 Hammersley, “Educational research and teaching,” 147, my emphasis.

to give us 'the truth', that 'the truth' can be translated into rules for action, and that the only thing practitioners need to do is to follow these rules without any further reflection on or consideration of the concrete situation they are in".²² This is telling, I think. It is not clear where the idea comes from that EBP amounts to unreflective rule-following, but their views clearly indicate that the "evidence" in question serves as the grounds from which you derive your practice. It aggravates things if the evidence emanates from RCTs, since such evidence is general and thus forces the teacher to treat every student alike. Both Hammersley and Biesta conclude that EBP, as they understand it, must be rejected. Obviously, both acknowledge that education has aims and need the means to achieve those aims, and that context-sensitive research can inform practice.

Interestingly, David Hargreaves seems to ascribe much the same function to evidence: data (D) from which practice (C) is derived. This evidence should tell us what works in what circumstances. He does not elaborate on how exactly evidence is to do its job for practice, but argues several places that the impact should be *direct*. His critics, e.g. Hammersley, take him to mean that research should tell practitioners which is the best technique for dealing with a particular kind of problem. That is, evidence provides the data from which you derive your practice. This is no mindless rule-following, though, he many times underscores that evidence should enhance professional judgment, not replace it. Nevertheless, it may be that Bridges, Smeyers and Smith have Hargreaves among others in mind when they describe EBP (the P standing in this case for 'policy') as follows:

The evidence-based policy movement seems almost to presuppose an algorithm which will generate policy decisions: *If A is what you want to achieve and if research shows R1, R2 and R3 to be the case, and if furthermore research shows that doing P is positively correlated with A, then it follows that P is what you need to do. So provided you have your educational/political goals sorted out, all you need to do is slot in the appropriate research findings – the right information – to extract your policy.*²³

Here we find a complication, namely the explicit introduction of *goals*. Some observations are in order. First, we see here that this type of consideration also casts evidence in the role of D – you extract your policy from it. Second, bringing a normative entity into the picture does not seem to make difficulties for the employment of Toulmin's model. The goal could be included in the grounds from which you infer your conclusion as to what you should do. Third, many perceived educational problems seem to depend on goals, such that if there is no goal stating that students should learn x, the problems of what the teacher should do in relation to it would simply not occur and we would perhaps have no research into that type of problems either. Conversely, one may imagine a situation in which this order

22 Biesta, "Why 'what works' won't work," 11.

23 David Bridges, Paul Smeyers and Richard Smith, "Educational research and the practical judgement of policy makers," *Journal of Philosophy of Education* 41, Supplementary Issue 1 (2008), 5-11.

of things is turned upside down, such that if existing evidence suggests that x is possible to achieve but z is not, then x becomes the goal – the desired results become identical to outcomes that are actually both attainable and measurable. Regretfully I have to leave this issue untreated in this paper.

Evidence as backing

It is not difficult to agree with the EBP critics that RCT evidence cannot be translated into rules for action and unreflectively implemented in practice. The literal understanding of “based” that takes evidence to have the function of data/grounds D in the Toulmin model clearly does not work – especially if the evidence in question is of the RCT kind.

Before I inquire into a different role for evidence, let me bring up again the example of the poor readers. What can we do when faced with a proposed claim and proposed data? To begin with, we might look closely at the descriptions of both C and D. As Jenicek and Hitchcock²⁴ point out; there is no gold standard for the correctness (or effectiveness) of C. C should therefore be justified by the best obtainable evidence; parts of which consists of D, but, as we shall see, not all. We also have to look at the description of D, and in our hypothetical case we might find it to be too vague. Just how poor readers are these students? Poor in what way? With some suitable description of D we are in a position to look at possible warrants. That is, we could ask our teacher how he got from D to C. In our hypothetical example it might look something like this: My students read poorly (D), so I shall ask my colleague what she did (C) since she is an experienced teacher (W). Alternatively: D, so I shall give them the same exercises that worked so well last year (C) since these students have the same problems, the same strategy should work (W). Alternatively: D, so I shall use Bowyer-Crane’s method to improve the phonological measures (C) since these particular reading problems are helped with better phonological measures (W).

The warrant is the justification for inferring C from D. It seems to me that the concept of a warrant is of great importance in educational reasoning, to draw attention to the relation between teachers’ decisions of what to do and the grounds their decisions are based on and to make this relation explicit. Often the warrant is left unstated, but in situations where people are asked to justify their actions or decisions the warrant is a good place to start. But what is a warrant? Toulmin requires that warrants be general, certifying the soundness of all arguments of the appropriate type. Warrants are not data; they are rules that basically say “data such as D entitle one to draw conclusions, or make claims, such as C”.²⁵ David Hitchcock²⁶ describes warrants as inference-licenses; that is, general rules which we reason in accordance with to authorize the step from D to C. Importantly, he points out that the question of how you get from D to C can have a variety of answers. In my example

24 Jenicek and Hitchcock, *Evidence-based practice*, 41.

25 Toulmin, *The Uses of Argument*, 91.

26 Hitchcock, “Toulmin’s warrants.”

the warrants naturally vary because they license the inference to different Cs, but one can easily imagine that the warrant from the same D to the same C can differ.

A warrant is thus not evidence in itself and must be established in a different way than the facts we invoke as data.²⁷ Obviously, not just any proposed warrant should be accepted as having authority; we might reasonably question the legitimacy of warrants if they strike us as somehow not up to standard. For example, we may ask why one should think that the same strategy will work with different students, or why certain phonological skills can remedy a reading problem. Warrants above all need to be reliable, and thus it is that Toulmin introduces the concept of backing; as that which justifies our warrants and provides them with the authority they need to license the step from D to C.

It is as *backing* that I think we can find a good place for research evidence in EBP, even RCT evidence. This is a different function for evidence; one that does not allow you derive decisions about what to do directly from the evidence, but one that helps you justify your decision. As a bonus, it provides a sensible answer to the much-discussed question of what it means for research evidence to *inform* practice. It suggests a more indirect role for evidence, which seems to be what many EBP writers want but clearly find hard to conceptualize.

Let us look at an example of reasoning to get to a conclusion about what to do. Again the example is fictive, and those well versed in research on reading will see immediately that I am taking certain liberties with the research. I use it simply to illustrate practical reasoning, nothing more. Suppose you are teaching first-graders to read, and toward the end of the year you observe that some of them are reading-delayed. This observation is your data, D. So, you infer, these children should receive extra word and text training, C. When a colleague asks how you came to this decision, you may answer that this is a well-tried remedy to help reading-delayed children (W). If your colleague is not satisfied with this warrant, he may ask you why you think this remedy helps. In Toulminian terms, he is asking you to justify your warrant, to give it the authority it needs to license the inference from D to C. He is asking for backing of the warrant. And here research evidence comes into the picture. You may, for example, refer to a randomized controlled trial indicating that compared with the control group, children who received this intervention for two consecutive 10-week periods, made significant progress on measure of letter knowledge, single word reading and phoneme awareness (B). This study concludes that a reading intervention program systematically delivered over a period of time is an effective intervention for children who show reading delays at the end of their first school year.²⁸ It supports your warrant and indirectly your decision.

Let me expand on this. First, we may see a goal as being implicitly present, for example the goal of teaching all children to read well. Second, when research evidence serves the

27 Toulmin, 92.

28 Peter Hatcher et.al., «Efficacy of small group reading intervention for readers with reading-delay: A randomised controlled trial,” *Journal of Child Psychology and Psychiatry* 48, no. 8 (2006), 820-827.

function of backing, it occupies a more indirect role in reasoning toward a decision of what to do. It certainly does not function as truths which we can translate directly into rules for action. It rather functions in accordance with what I above took to be the common philosophical understanding, namely as support for the warrant. But the distinctions may be very fine here, since “evidence” can be used in both capacities, both as D and B. I have treated D rather step-motherly in my example, and no doubt the data comprising D can come in many different shapes, from observations in practice to test scores indicating that children may have low phoneme awareness. As Jenicek and Hitchcock point out:

The grounds [data D] are the underlying evidence that supports this claim, that is, the results. The argument is evidence-based in the sense that the claim rests on systematically obtained observations.²⁹

That is to say, D should be justified. This means that evidence, including quantitative research evidence, can also in some cases perform the function of D. Nevertheless, it makes sense to say that in the practical reasoning that we are talking about here, the data that provides the starting point are more likely to be an observation of a problem or a situation that requires some form of action on part of the practitioner. The important thing to keep in mind is that D and B answer different questions, perform different functions.

Third, there is the question of qualifiers and rebuttals or conditions of exception. They both speak to the bearing of W on the inference from D to C, that is, to the applicability of W. “[...] qualifiers (Q) indicating the strength conferred by the warrant on this [i.e. the D–C step], conditions of rebuttal (R) indicating circumstances in which the general authority of the warrant would have to be set aside”.³⁰ Hargreaves,³¹ it will be recalled, wants research evidence that demonstrates *conclusively* that strategy y yields better results than strategy x. This, I take it, amounts to his wanting a universal warrant with an absolute backing, allowing no exceptions at all. Later he (albeit apparently unwillingly) softens this view somewhat and deals in probabilities instead.³²

Hatcher *et.al.* on the other hand, state explicitly that there are exceptions; 25% of the children did not respond to the intervention. They also provide a description of the predictors that characterize the non-responders and suggest that these account for the non-responsiveness to the intervention.³³ If we use Hatcher’s quantitative data as backing, we cannot use take “this is a well-tried remedy” to be a universal warrant, but for the sake of this argument we can take it to be a general warrant and accept it as lending authority to our decision. Thus, we would have to expand our practical reasoning: based on observa-

29 Jenicek and Hitchcock, *Evidence-based practice*, 165.

30 Toulmin, *The Uses of Argument*, 94.

31 Hargreaves, “Teaching as a research-based profession.”

32 David Hargreaves, “In defense of research for evidence-based teaching: a rejoinder to Martyn Hammersly,” *British Educational Research Journal* 23, no. 4 (1997), 405-419.

33 Hatcher *et.al.*, “Efficacy of small group reading intervention for readers with reading delay,” 825.

tions of reading delays (D), you infer that *unless* the children have extremely low scores on word recognition and letter knowledge (R), they will presumably (Q) respond well to extra word and text training (C), since this is a well-trying remedy for reading-delayed children (W); the warrant being backed by sound evidence (B).

Fourth, it is simply assumed here that the research evidence is sound. But to appeal to (empirical) evidence might give an aura of scientific support that is misleading, perhaps even unfounded, if the quality of the evidence is poor. It is also the case in educational research that conclusions tend to be contradicted in other studies; that is, in a good many studies there is both positive and negative evidence. In such cases it is an open question whether the warrant can be said to carry any authority at all. Decision makers (and others) may be very selective in their appeal to evidence to support or justify their views or decisions – proponents of virtually any claim can thus maintain that the “evidence” supports their views. It may also be the case that competing decisions C, inferred from the same data, are equally well justified with a warrant backed by sound research evidence. There are, for example, other forms of intervention to remedy poor, slow or delayed reading; such as programs focusing on letter-sound knowledge and phonological awareness, and on vocabulary, inference generation and narrative skills.³⁴ Conditions of exception are reported for both programs, to the extent that it would be problematic to say that either of them confers authority on a warrant,³⁵ a general warrant is not applicable. In use of research evidence it is vital to map, as best one can, the conditions of exception.

Evidence replaces professional judgment?

Hopefully the above illustrates the difference between using evidence as data (D) and as backing (B). Advocates and critics of EBP alike seem to quite naturally cast evidence in the role of data, such that practice can be directly derived from this assumed foundation of facts and statistics. Employing Toulmin’s model I have argued above that it makes more sense to cast evidence in an indirect role as backing of warrant. That makes the reasoning toward a decision of what to do more longwinded, but it has the additional virtue of forcing the practitioner to pay attention to possible exceptions.

Unlike critics such as Gert Biesta, John Elliott, Martyn Hammersley and Ian Sanderson I am not afraid that research evidence will replace professional judgment. To accord evidence the function of backing, is rather to show how it can enter into and be part of professional judgment. To the best of my knowledge, no EBP adherent has ever argued that research evidence should replace professional judgment; Hargreaves himself explicitly states that evidence should enhance judgment, not replace it – although he does not say how.

The issue of general versus context-bound knowledge is frequently discussed in education, and also in the context of EBP. Writers on EBP largely agree that EBP mainly deals in

34 Claudine Bowyer-Crane et.al., “Improving early language and literacy skills : Differential effects of an oral language versus a phonology with reading intervention,” *Journal of Child Psychology and Psychiatry* 49, no. 4 (2008), 422-432.

35 Bowyer-Crane et.al., 422.

generalized evidence, but they disagree about the value of generality. Hargreaves thinks it is a good thing and therefore welcomes RCT; Elliott thinks it is a bad thing and recommends case studies instead.³⁶ Most critics opt for context-bound evidence, because judgments are deeply context-dependent.

General knowledge of course is problematic if one thinks that EBP entails that practitioners are reduced to following general rules of action with no opportunity to adapt the knowledge to the concrete circumstances. It is hard to see precisely what the EBP critics take a professional judgment to be and what sort of considerations they see as entering into such judgments. They are context-dependent, so must clearly make use of contextual data, but which data, and how? Some critics also argue that EBP should be rejected because the generalized knowledge (evidence) in question exclusively speaks to the effectiveness of a given strategy, not only ignoring but precluding questions of ethics or appropriateness.³⁷ What works is not what matters, Sanderson argues, what is appropriate is what matters. And here is the other element in professional judgments: they seem to be intimately associated with ethical concerns, not instrumental ones. But then again, it is hard to see why these should be seen as mutually exclusive. Elliott attributes to Hargreaves the view that generalizations can be continually improved upon, thus moving in the direction of universal statements which in turn entail a progressive diminution of unpredictability in human affairs. This is an interesting observation and quite possibly true of Hargreaves' wishes for EBP, but not necessarily true of EBP.

Does EBP imply a diminution of unpredictability in learning, such that the probability of attaining the predetermined goals is maximized, bordering on certainty? Many educationists are highly suspicious of generalized solutions to educational problems. This worry points to characteristics of the educational field itself: its (practical) problems are diverse, unstable, unpredictable and occur in messy, particular contexts.³⁸ While I by and large agree with this description, it does not follow that practitioners cannot avail themselves of generalized knowledge or even of RCT evidence. As Jenicek and Hitchcock point out, uncertainty in a field does not speak against EBP; what happens is rather that the warrant for the D–C inference is merely provisional or presumptive.

All human affairs, including education, can be said to include some measure of uncertainty, some degree of randomness. It may be true that the educational climate today incorporates a wish for teaching methods to guarantee that the predetermined learning outcomes are attained, and EBP is part of this climate. But, thankfully, EBP cannot guarantee learning outcomes, nor should it really be expected too. Hargreaves may want conclusive evidence, but the world of education is simply not like that. But neither is it completely chaotic and unpredictable and all educational problems are not unique.

36 Elliott, "Making evidence-based practice educational," 564.

37 For example, Sanderson, "Is it 'what works' that matters."

38 Bridges, Smeyers and Smith, "Educational research and the practical judgement of policy makers."

The critics of EBP are surely right that professional judgment in education, practical reasoning, does not consist in the unreflective following of rules directly derived from general research evidence. Rather it at least partly consists in reasoning to a decision about a particular course of action in a concrete situation characterized by uncertainty and many unknown (and presumably ungovernable) factors. The pathway of reasoning that emerges from Toulmin's model and that is developed by Jenicek and Hitchcock, is one that begins from particular concerns, proceeds in various steps from D to C, the step authorized by a warrant which should be backed by generalized (or other) evidence, via a check on conditions of exceptions which may render the warrant inapplicable, and back to a decision about what to do in the concrete case. There is no reason why practical reasoning should leave out ethical concerns – one can know of an effective method and refrain from using it on ethical grounds. Toulmin's model is complex and rich enough to accommodate various kinds of consideration. Evidently professional judgments are highly complex and there are many pitfalls along the way, such as ignoring the importance of making explicit and checking the warrant that licenses the inference from data to claim/decision. I would like again to draw attention to the pitfall of ignoring possible conditions of exception; I have a feeling this element in educational reasoning is sadly neglected. But one may "misdiagnose" the poor readers, their behavior may be misinterpreted, or their "diagnostic" test results may for various reasons be misleading (one can note here the temptation to call for more testing of children). If a child is an exception, for example suffers from severe dyslexia, the proposed remedy might have no effect on him. But even if the problems of the children were accurately described, one has no guarantee that the preferred course of action will yield the desired result. There might in principle be other factors that influence the situation and that are not within the teacher's control. Some element of unpredictability remains.

Conclusion

There are several different elements that are discussed under the EBP heading, and I have in this paper focused on one: the possible functions of research evidence in practical reasoning – or which is an essential part of teaching. I have chosen to use RCT evidence as my example, since this is particularly contested.

I have argued that both adherents to and critics of EBP seem to hold the same view of the function that research evidence is to perform in EBP, namely as a foundation, consisting of facts, data and evidence about *what works*, from which practice could and should be derived. It may be that this understanding is brought on by a literal interpretation of the meaning of "based". For the adherents this is a good thing, since it presumably will make education much more effective in attaining its goals. While this view may be a bit caricatured, it does capture the optimism expressed by advocates of EBP. The critics, who outnumber the adherents (at least if you do not count politicians and bureaucrats), understand the function of evidence in the same way, but see it as a bad thing. Some interpret it as implying that EBP reduces practice to mere unreflective rule-following; the evidence

decides what you should do. Others problematize the usefulness of general knowledge for professional judgments that are inevitably context-bound, and still others see effectiveness as precluding or at least overriding ethical concerns.

Using Toulmin's model of the lay-out of an argument, inspired by Jenicek and Hitchcock, I have argued that it makes more sense to view research evidence as *backing* of the warrant. The direct impact both adherents and critics presuppose entails that evidence be understood as *data* or *grounds*. The critics are right that generalized evidence cannot tell you directly what to do with your students. As backing, evidence gets an indirect role in complex reasoning toward a decision. It is not enough just to possess evidence of how things are or of how they work; one must also be able to *use* it. There is plenty of room for sound professional judgments in deliberations concerning what to do and how to use available general knowledge and evidence. This is very far from being unreflective rule-following. There are good, bad, logical and illogical ways of using evidence; merely having it is not sufficient.

To use research evidence as backing of the warrant is to accord it an indirect role in professional judgment, and may be one way of explaining how research can *inform* practice.

This might make EBP more acceptable to the critics, since many of them explicitly acknowledge that research should inform practice – they just do not tell us what it comes down to. Evidence as backing also leaves room for uncertainty, for the unpredictability of human affairs, and Toulmin's model calls attention to the importance of investigating conditions of exception which might make the warrant weak or inapplicable altogether.

EBP can thus be said to have received criticism it does not necessarily deserve. It does not necessarily entail unreflective rule-following. On the other hand, we must not let it get away with its part in the broad and highly troublesome instrumentalization of education that we see today.