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Evidence-Based Practice and Educational Research

Tone Kvernbekk

Introduction

"Evidence-based" has been a buzzword in contemporary education (and elsewhere) for at least 15 years. The debate about evidence-based practice (hereafter called EBP) is difficult to grasp. It branches off in several directions and is to some extent plagued by unclarity, confusion and misunderstanding. EBP 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 (Simons, 2003).

There are at least three generally interrelated main branches of EBP discussions. The first concerns educational research and what it could and should contribute to a "what works" kind of practice. The second concerns possible implications for the teaching profession, and the third concerns possible implications for educational practice. Until recently, the debate has been rather adversarial: either you are *for* EBP or you are *against* it. It does seem to me that the critics far outnumber the adherents; that is, if we only count educational theorists and not politicians or bureaucrats. I am not sure about teachers.

It is legitimate for governments to wish to improve the results of their country's educational system and be concerned with how desired results can best be achieved. The problems begin to turn up when you look at the broader picture of education, of which EBP forms a part. This broad picture is dominated by a vocabulary consisting of such concepts as learning outcomes, testing, measurement, qualification, effectiveness, accountability, instrumentality, means-ends, causality, employability and predictability (listed here in no particular order). To

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a certain extent, this picture is in keeping with education's traditional self-understanding as a practical, intentional discipline: to bring about changes that are considered desirable and perhaps necessary. Such changes are described in the curriculum and commonly called learning, development, knowledge acquisition or *Bildung*. In recent years, however, the focus on achieving results has taken on unprecedented proportions. Schooling and education are considered successful when predetermined outcomes have been achieved. This view forces education into making excessive requirements regarding assessment, testing, measurement and interventions. The "what works" agenda is generally taken to belong to this picture: to know what works in order to maximize the probability of attaining the goal in question, which means achieving the desired learning outcome in an effective way. The critics claim that the consequence of all of this, when taken together, is a very narrow and highly instrumental conception of education.

I believe that the critics are correct on this point and are giving a timely warning. We should worry about the conception of education that might spring from this picture, which is admittedly very broadly painted. To the extent that EBP contributes to this picture, the criticism is justified. However, it does not follow that we should reject EBP altogether, as some critics argue (e.g. Biesta, 2007). Moreover, it should not be criticized unjustly. In and of itself EBP is neither necessary nor sufficient for today's educational "landscape", and we would do well to remember that education has been criticized for instrumentality long before EBP entered the scene (e.g. Hellesnes, 1975; Peters, 1966; Skjervheim, 1969).

In this article I will look specifically at different views of what educational research can, should and should not contribute to practice, as the debate has been played out over the past years. This is a large and multifaceted debate, and I make no claims to exhaust the subject matter.

What kind of evidence and evidence of what

What does it mean to ask for knowledge that works? And what does it mean for practice to be *based* on evidence? Both questions have been hotly debated. Generally, knowing "what works" is considered to be knowledge of how desired results are best achieved. But what should be the role of educational research in this matter? And what kind of evidence are we talking about?

First, a brief note on the concept of *evidence*: The questions of *who, why* and *what constitutes evidence* are much discussed by critics and advocates of EBP alike (see e.g. Gamson, 2007). The more basic question of what evidence seems

to be missing from the debate, as does the question of the relationship between evidence and that which it is evidence *for*; including claims, beliefs, theories, etc. The nature of the relationship between evidence and belief is of course somewhat contentious, as are most philosophical questions. Nonetheless, the established philosophical understanding basically sees evidence as something that *supports* a belief or *justifies it* (Achinstein, 2001). Evidence thus speaks to the truth value of a belief or theory, either by supporting its truth (positive evidence) or indicating its falsity (negative evidence). This is a highly simplified description of a complex story (see Kvernbekk, 2011a for an overview). In the EBP context, evidence is thought to speak to the effectiveness of a strategy or method of teaching.

We should pause briefly here and ask if there is a difference in principle between supporting claims to truth and claims to effectiveness. Basically, it seems to me that evidence performs the same functions (supports, justifies) in both cases, but there are also differences. When we begin talking about effectiveness, we have inserted a note of normativity into the discussion. Then the framework does not comprise truth claims, but means and ends. We have a goal, and we want to know if certain methods, actions, interventions, etc. are effective ways of attaining the goal or not. This cluster of problems is criticized in different ways. For example, the focus on effectiveness foregrounds the means and therefore diverts attention from the more important issues of the goals themselves (e.g. Biesta, 2007). While this may be true, it does not follow that adoption of EBP entails that talk of goals is precluded, as Biesta argues. One is of course free to deliberate first about goals and then about effective means. On the other hand, Biesta is surely right that many goals and aims are predetermined in great detail and not really up for discussion. However, goals are stated in the curriculum whether you have EBP or not – although EBP may contribute to the current and rather alarming degree of goal specification. The second criticism says that "what works" leads exclusively to concerns of effectiveness and ignores those of appropriateness (e.g. Sanderson, 2003). Again, while this may be true, I see no reason why it should necessarily follow from the adoption of EBP. Deliberations of appropriateness are by no means excluded by definition. Added to this cluster of problems are issues of causality and generality. The first merits an article in its own right, and I shall therefore simply side-step it here, while I will return to the second subsequently.

The function of support generally ascribed to evidence can in principle be performed by facts, experiences, and all sorts of data and reasons of different types (philosophical, psychological, moral, etc.). However, there has been a clear

tendency to give privilege to evidence brought about by randomized controlled trials (RCT). One can think of several reasons for giving such a privileged status. For example, quantitative data may be considered to provide a firmer basis for practice (and policy), since this type of research design allows for stronger, hence better justified, conclusions. This is because trials using control groups yield differential support. They give us reason to believe that a certain hypothesis is true, while at the same time *not* affording equal or better reasons for believing a rival hypothesis (Erwin & Siegel, 1989). That is to say, RCT provides evidence that allows you to choose one hypothesis (belief, theory) over its rivals. Such research designs are vital if you want to draw causal conclusions, and it seems reasonable that this is precisely what you want in a "what works" setting. Take reading instruction as an example. There are many studies that compare the effectiveness of different methods or interventions. For instance, Hatcher *et.al.* (2006) conducted an RCT which indicates that compared with the control group, reading-delayed children who received a certain intervention for two consecutive 10-week periods made significant progress on measurements of letter knowledge, single word reading and phoneme awareness. The study concludes that this program, when delivered systematically over a period of time, is an effective intervention for approximately 75% of children who show reading delays at the end of their first school year, the other 25% did not respond to the intervention.

It is not unreasonable to view David Hargreaves, professor of education at Cambridge University (now retired), as the chief instigator of the EBP debate. Anyone writing about EBP refers to his views. In his now famous (infamous) lecture to the Teacher Training Agency of Great Britain in 1996, he compares education with medicine and argues that teaching is not a research-based profession, that a radical change in the kind of educational research done is needed, and that the organization and funding 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 (Hargreaves, 1996a:5, emphasis added).

This way of thinking, he believes, will quite naturally lead to a dramatic increase in research aimed at providing an evidence base, and most of this will be quantitative evidence gathered through using RCTs. It is a long-standing theme for

Hargreaves 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 undertaking research on practical issues maintaining that. To gather evidence about what works in what circumstances is the whole point of evidence-based research, he maintains (1996b). Teachers, Hargreaves says, primarily want to know what works – and are only secondarily interested in understanding the *why* of classroom events. It is the job of educational researchers to provide this kind of knowledge to teachers. Too much research is irrelevant to practitioners, he argues. I shall return to the question of how we might understand the idea of *relevance*.

Again, we are encountering a cluster of problems. First, it is important to point out that the privileging of RCT seems to be very real in many countries, including our own, and that this clearly has effects on the kind of educational research that is funded and performed. Second, it is equally important to point out that any views stating that RCT evidence is the only valuable or admissible form of evidence are misguided and trade on an extremely narrow view of the nature of research (see Phillips, 2006a and 2006b for useful discussions). As stated above, the function of evidence can be performed by facts, experiences and other kinds of reasons. The *Journal of Philosophy of Education* devoted an entire issue to the question of which evidence types that can be used in practice, for instance case studies (Elliott & Lukes, 2008), narratives (Griffiths & Mcleod, 2008) and philosophy (Conroy, Davis & Enslin, 2008). Third, while there is a great deal of educational research reported, there is the question of what kinds of educational problems are actually researchable. In some sense, I suppose. However, all issues and problems can be researched in one way or another. But in the present context we are talking about problems that lend themselves to a "what works" framework; that is, to finding an effective, preferably generalizable solution to a problem. As far as I can see, Hargreaves has not discussed this question, and he may be viewed as overly optimistic regarding the contributions that research can make. Martyn Hammersley (1997), on the other hand, argues that many of the problems teachers face are not open to research at all, since only "technical" problems are so open. Teachers' problems, he says, are "practical". Incidentally, this means that Hammersley throws doubt on the idea that teaching can be *based* on research. Unfortunately, he does not explain what he takes the concepts "technical" and "practical" to mean, but we do get a hint as to what "practical" might mean. I shall come back to this idea in the next section, but first we must return to the question of relevance.

It is of course not a bad thing if research turns out to be relevant to practice and can serve to improve it as well. But while there in principle are many different ways in which research can be relevant, Hargreaves seems to have settled for one: The impact of research should be *direct*, and it should show what works in what circumstances. 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 to say, research should provide recipes for teachers, and these recipes should be such that following them maximizes the probability of achieving desired outcomes. Considering that Hargreaves wants evidence to show *conclusively* that y leads to better results than x, one might suspect him of wishing for certainty in outcome achievement. John Elliott (2003) attributes to Hargreaves the view that generalizations can be continually improved upon, thus moving in the direction of universal statements which in turn imply a progressive diminution of unpredictability in human affairs. This may well be true of Hargreaves' ambitions for EBP, but not true of EBP. Research is fallible; it does not deal in certainties and can by no means guarantee outcome.

If *direct* impact means that research should tell teachers how to solve a particular problem or guarantee that predetermined outcomes are attained, Hargreaves' views deserve the criticism they have received. Nevertheless, the meaning of *direct* is never fully explained. Some critics take EBP to imply a rule-following form of practice. For instance, Hammersley states that since teaching is practical rather than technical, "[…] it is a matter of making judgements rather than following rules" (1997:147) thus seeing EBP as tantamount to rule-following. The same view is spelled out in more detail by Gert Biesta, who describes (the most extreme) advocates of EBP as "[…] those who think that research will 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" (2007:11). One should not wonder that both Hammersley and Biesta conclude that EBP should be rejected.

Most writers agree with Hargreaves that it is a good thing for research to be relevant to practice, but they take issue with several aspects of his view, the first being that relevance means direct impact. This impact should rather be *indirect*. Second, in so far as Hargreaves can be taken to mean that *all* educational research should cater directly to practical needs, his view is quite rightly problematized. This would imply a narrowly instrumental view of educational research, and such sub-disciplines as history and philosophy of education would

be deemed irrelevant and become marginalized. We must hold on to the view here that educational research serves multiple functions. Third, there is the problem of generality, which I discuss below.

To sum up: the potential use of research evidence in practice is a matter of hot debate. However, it is also clear that practice should be based on *something*; it cannot be conjured out of thin air. As David Bridges and Michael Watts observe, "[EBP] is calling for practice to be based on *evidence* as opposed perhaps to whim, prejudice or embedded custom" (2008:44).

Uses of evidence

It is time to take a closer look at the word "based" in evidence-based practice. The understanding of this word seems to be literal; it is seen as a basis, a foundation, from which one can *derive* practice. This is obviously the understanding that lies behind Hammersley's and Biesta's interpretations of EBP as unreflective rule-following, and equally obviously the understanding that lies behind Hargreaves' wishes of making a direct impact. I think much of the EBP debate is hampered by this literal understanding of "based"; namely, that if practice is based on evidence, you have a foundation of data that tells you what to do. It is not, however, the understanding of the function of evidence that I have taken to be standard, namely evidence as support of hypotheses. We must distinguish here between evidence and that which it is evidence for; a theory, belief or claim concerning the effectiveness of a given teaching method. It is the method that is supposed to be effective, not the evidence. The evidence would consist of data that justify our belief in the effectiveness of the method. It is important not to conflate the evidence with the belief (claim, theory) it supports. Consider CSI (the popular television crime series) as an example of this point: The evidence consists of shoe prints, a blood spatter pattern on the wall, a partial fingerprint on the knife and a receipt from a gas station. But the hypothesis is that the butler committed the crime. The evidence is that which supports the hypothesis.

So, practice cannot be based directly on evidence. But can it be based directly on research provided knowledge (theory, beliefs) of what works? Biesta and Hammersley, as we have seen, say no, because that would reduce practitioners to more or less mindless rule-followers. It is not clear where the idea that EBP amounts to *rule-following* comes from; I have found no EBP advocate who explicitly subscribes to such a view. The fact that the problem has been raised points to one of the EBP critics' biggest worries; that evidence should replace the

teachers' professional judgment. But not even enthusiastic advocates like Hargreaves advocate for this view; indeed, he claims that evidence should enhance judgment, not replace it.

There is another reason why critics reject the notion of derivation of practice from a foundation of evidence, namely generality. This, incidentally, is also one of the reasons why evidence emanating from RCTs is especially problematic. Such evidence is general. If you were to derive your practice from general evidence, it would force you to treat every pupil alike. Both Helen Simons (2003) and John Elliott (2003), for example, argue that since practice is inevitably particular, the evidence in question should be collected in this context and, hence, be context-bound, not general. Consequently, Elliott suggests that case studies are more appropriate than RCTs.

In my view both these objections to EBP are unsuccessful. Arguing that EBP implies unreflective rule-following is a straw man, since nobody to the best of my knowledge has argued that it is, much less that it would be a good thing. It also mistakes the role of evidence by confounding evidence with that which it is evidence for, in this case the effectiveness of a method or strategy. Nor is it understandable why practitioners should restrict themselves to context-bound knowledge and not avail themselves of general knowledge. The use of general knowledge by no means jeopardizes professional judgment. It is rather the case that use of general knowledge implies judicial adaption of this knowledge to concrete circumstances. There is nothing in EBP that precludes good professional judgment; I am inclined to say that EBP on the contrary makes tough demands on the judgment of practitioners.

I find it necessary to elaborate somewhat on this argument. Many of the writers on EBP opt for an *indirect*, rather than direct, relationship between research and practice. It is, however, not easy to say what *indirect* might mean. Many EBP critics and others take it to mean that research should *inform* practice, but admit that it is hard to specify what this might amount to (e.g. Bridges, Smeyers & Smith, 2008). I think the literal understanding of "based" has blocked from view a more sensible function for evidence in practice, one that fits better with the standard philosophical understanding of evidence. It is an indirect function, one that does not allow you to derive practice from evidence; instead helping you justify your decisions about what to do.

All educational decisions about what to do are decisions made under uncertainty. All human affairs can be said to include some degree of randomness. It may be true that the educational climate today incorporates a wish for teaching

methods that can guarantee the achievement of predetermined outcomes, but Hargreaves wishes in vain for conclusive evidence. The practical problems of the educational field are diverse, unstable, unpredictable and occur in messy, particular contexts (Bridges, Smeyers & Smith, 2008). Nonehtheless, it does not follow that generalized knowledge or even RCT evidence cannot be used. We just need to look closely at the elements involved in making professional judgments, and I will do so by means of an example.

Suppose you are teaching first-graders to read, and toward the end of the school year you observe that some of them are reading-delayed. This observation is the starting point of your practical, professional reasoning about what to do (Kvernbekk, 2011b). You may decide that these children need extra word and text training. When a parent asks you why, you may answer that this is a well-tried remedy for reading-delayed children – in other words, it works. But this is a difficult parent, so he asks you why you think this remedy is going to help his son, who is otherwise a bright boy. At this point in the practitioner's reasoning, there are two aspects that need attention. The first is that this is the place where research evidence comes into the picture. In order to answer the parent's question you may, for example, refer to Hatcher *et.al.*'s study (2006) which indicates that children who received this intervention for two consecutive 10-week periods showed significant progress on measurements of letter knowledge, single word reading and phoneme awareness. This study, which is an RCT, helps you justify your decision about what to do. It does not in any way dictate your decision, but supports its adequacy and correctness. What we see here is that research evidence takes a more indirect role, one that fits the common philosophical understanding of evidence as support. The reasoning does not begin with the evidence; it begins with the observation of something that might be a problem. Evidence enters into the reasoning to back up the decision the practitioner makes about what to do. In short, it *informs* practice.

The second aspect that demands attention here is one that to my mind has received neither adequate nor sufficient attention in the EBP debate: Are there conditions of exception? That is to say, does the study in question apply to the boy in question? Unless the boy's level of reading mastery is correctly assessed, the proposed remedy might not work. This fictitious boy is otherwise bright, so perhaps he is simply bored? Or perhaps his parents' ugly divorce is taking up all his energy? There is an array of possibilities here. Incidentally, we also see the attraction of testing children to identify the problem; if the child is an exception, the remedy might fail because it misses the mark. Indeed, Hatcher *et.al.* explic-

itly state 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 (2006:825). We may thus reason that *unless* the children have extremely low scores on word recognition and letter knowledge, they will presumably respond positively to the well-tried remedy you propose. But there is no guarantee. The evidence is not *conclusive*, as Hargreaves would have preferred. And even if these children are not exceptions, learning processes cannot be completely controlled. There might be some unknown, random factor at work which disrupts progress toward reaching the outcome.

We see in this example that even RCT evidence may be used in practice. It does not function as a foundation from which you derive rules for action; rather, it enters into your practical, professional judgment about what to do in a concrete situation. Moreover, it is not the only consideration that enters your judgement – there is the knowledge of the children in question, their parents; there are ethical considerations to be made, and one must take the available resources into consideration. Professional judgment is a configuration of very different types of information, of which research evidence may be one. I have cast evidence in the indirect role of support of a practical decision; no doubt it may play other roles as well.

However, the problems of our fictitious teacher may not be over. So far in my example, I have simply assumed that the evidence is sound. But appealing to (empirical) evidence might give an aura of scientific support that is misleading, perhaps even unfounded, if the quality of the evidence is poor. This is often difficult to judge; it is by no means easy to read statistics or reports and use them adequately. There is also another pitfall lurking here, one that has been sidestepped in the EBP debate, with the exception of Denis Phillips (2007), namely the phenomenon of underdetermination. This thesis says that adoption of a theory or an intervention cannot be based on the consideration of evidence or facts alone: facts underdetermine theory. This means that the same data or evidence might be compatible with more than one theory or teaching strategy, even if the theories (strategies) themselves are incompatible. In our example, we can imagine the father objecting to your decision by pointing out that the results provided by Hatcher *et.al.* would also support an intervention which focused on letter-sound knowledge and phonological awareness. On the classical understanding of underdetermination, there is an assured possibility of having rival theories that fit the same data (see Norton, 2008, for a discussion), and choices between them must therefore be due to other factors, such as values and subjective preferences.

It is also the case that in educational research conclusions tend to be contradicted in other studies; that is to say, we may have both positive and negative evidence on our hands. This situation may be due to the sheer complexity of educational phenomena and problems, the selection of variables and perspectives in one study will capture some part of the phenomenon researched, while another study may employ a different set of variables, concepts and perspectives. Or they may employ the same set and yet yield different results. In such cases, one is left to weigh the evidence as best one can – a complex process indeed, but not impossible. However, this state of affairs leaves practitioners and other users of research evidence the possibility of being very selective in their choice of evidence to justify their views or decisions. Proponents of different sides in virtually any debate can claim that the evidence supports their view, as one simply picks the evidence that best fits one's preconceived views (Phillips, 2007). EBP is thus not problem-free, even if we should find a good place for research evidence, even of the RCT kind, in the professional judgments of educational practitioners.

Conclusion

The above discussion represents but a small sample of the large and multifaceted EBP debate. The debate with its various positions is difficult to grasp entirely, as it branches off in several directions.

I have argued that the debate to some extent is hampered by unclarity and misunderstandings. It seems to me that the very understanding of the concept of evidence itself is poor; perhaps what evidence is has simply been taken for granted. I think that there are two particular misunderstandings concerning evidence at work in the debate. First, there is a tendency to conflate evidence with data. While these two overlap, they may not be the same and they may play different parts both in research and in use of research results. Surely, the term *evidence* also has different meanings, but its basic meaning is that which supports or justifies views, theories, beliefs – and, by extension, teaching strategies or interventions. This function can be performed not only by data, but also by experience, facts, narratives and other reasons. Any attempt to legislate RCT as the only admissible evidence in EBP is illegitimate. Second, there seems to be a conflation between evidence and that which it is evidence for. This may come down to a too literal interpretation of the word "based" – it does indeed suggest evidence as a foundation either on which you base your practice or from which

you derive it. I agree with the EBP critics that this is highly problematic, but it does not follow that EBP should be wholly rejected.

Rather, what follows is that we must find a different, more sensible, function for evidence. This conclusion is based on the presupposition that practice should –in some sense – be based on something. If we reject generalized, research-based knowledge, practice might become hostage to common sense, tradition, prejudice or subjective preferences. I have therefore indicated a more indirect role for evidence where it enters into professional judgments, for instance to justify a decision about taking a particular course of action. As I have suggested, it is not enough to be in possession of good evidence; the important thing is rather how this evidence is put to use in reasoning and action. It is also important to be aware of the rhetorical uses of evidence and how it can be misused to give an aura of certainty where none exists. Stated quite simply, EBP does not work miracles, and it cannot guarantee that the predetermined outcomes will be achieved.

Finally, while EBP does have its good sides, since it is part of a broad picture of a thorough-going (re)instrumentalization of education, we should retain a certain amount of scepticism toward it. We must also be on our guard against an unduly narrow and instrumental conception of educational research. Research has many different purposes and takes many different forms.

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