


ORIGINAL ARTICLE

Rethinking Evidence-Based Practice in Education: A Critical Literature Review of the 'What Works' Approach

Andrew B. Jones^{1*} 

¹ EdD Candidate, The Open University, Milton Keynes, UK. MSc Theory and Methods in the Study of Politics, SOAS, University of London
ORCID: 0000-0003-0973-285X

Ethical Statement

The paper reflects the authors' own literature review and analysis in a truthful and complete manner.

Funding Information

This literature review was partially funded by The Reach Free School, Rickmansworth, UK.

Conflict of Interest

No conflict of interest is present in the conduction or the reporting of this study.

ABSTRACT

This literature review critically examines the concept of 'evidence-based practice' (EBP) in education, particularly its implementation in England. EBP, which advocates using scientific research to inform teaching, enjoys widespread support from policymakers and educators. However, concerns exist regarding its emphasis on quantitative evidence, particularly findings from laboratory experiments and randomised controlled trials (RCTs). Critics argue that this approach can reduce teacher autonomy and struggles to adapt to diverse educational contexts. By analysing a broad range of literature, this review explores the current 'what works' approach within EBP and highlights its challenges, such as neglecting qualitative data and the complexities of real-world classrooms. The review concludes by advocating for a more balanced approach that integrates both quantitative and qualitative research methods, while fostering collaboration between researchers and practitioners.

Keywords: evidence-based practice, educational research, cognitive science, what works, education policy

Received: 01/06/2024

Accepted: 21/06/2024

*Corresponding Author

Andrew B. Jones, EdD Candidate, Open University UK, Personal Development Lead at The Watford Partnership for Teacher Training and The Reach Free School, UK.

Email: abowdenj@gmail.com

INTRODUCTION

Researchers largely agree that educational practices should be grounded in research evidence. The ambition to cultivate a research-informed teaching workforce is also prominent in discussions among policymakers, school leaders and teacher groups in England (Flynn, 2019). Proponents of 'evidence-based practice' (EBP), such as Roediger (2013), Weinstein et al. (2018) and De Bruyckere and Kirschner (2022), endorse a 'medical-model' of research engagement for education centred on cognitive science and randomised control trials (RCTs). However, some scholars caution against overemphasising EBP when it prioritises scientific notions of evidence over other valid research forms (Wrigley & McCusker, 2019; Biesta, 2023; Simmie, et al., 2023; Biesta, 2024). A growing debate among researchers revolves around the gap between educational research and its practical application, as well as what constitutes 'evidence' (Coldwell, 2022; Anwer & Reiss, 2023). Therefore, this review article will unpack the current popular notion of EBP, prevalent among policymakers and school leaders in England, and identify some key limitations of this interpretation.

REVIEW CONTEXT

Concepts like EBP and 'evidence-informed practice' have gained prominence not just in the UK but also among educators and policymakers in the USA and further afield (Coe & Kime, 2019; Slavin, 2020). Both concepts are used interchangeably but evidence-informed practice acknowledges the influence of students, teacher expertise and school context on the application of research in classrooms (Neelen & Kirschner, 2020). Grounded in the 'medical model' of the best practice (Hargreaves, 1996; Roediger, 2013), these concepts have led to a shift in professional practices and pedagogy, particularly the UK, emphasising the use of cognitive science in teaching decisions over more traditional theories of learning (Weinstein et al., 2018). In England, Department for Education (DfE) sponsored research reviews and the Education Endowment Fund (EEF) define EBP as a largely scientific endeavour (Scott and McNeish, 2013; Coldwell et al., 2017; Perry et al., 2021).

This literature review, part of a broader doctoral study on the impact of EBP on early career of teachers in England, preceded a wider review that included EBP's impact on teacher agency and professional identity. The concept of evidence-based or evidence-informed practice is central to the DfE's formulation of the Early Career Framework (ECF) (DfE, 2019b; Gibb, 2023). The ECF is a fully funded statutory two-year program for all newly qualified teachers in England, involving weekly self-study, structured mentor meetings, and mandatory training sessions following a predetermined curriculum. Nonetheless, this review primarily focuses on understanding the current popular notion of EBP, which includes criticisms of its reliance on scientific and quantitative methodologies, as well as concerns regarding its application in educational settings.

The DfE aims to integrate EBP into a comprehensive teacher development system, progressing from Initial Teacher Training (ITT) to school leadership. The former Minister of Education in England, Nick Gibb, highlighted the DfE's provision of high-quality, evidence-based training and professional development at every career stage, facilitated by the EEF (Gibb, 2023). However, there is a need to balance scientific EBP with teacher agency to foster expertise and effective learning in diverse contexts. Imposed EBP approaches, while valuable, might lead to teacher disempowerment and affect job satisfaction and retention (Ball, 2021; Simmie et al. 2023). Thus, it is crucial to consider whether pedagogy can be entirely encapsulated within scientific boundaries before endorsing EBP as the sole guiding principle in education. Subsequently, this review seeks answers to two preliminary research questions:

1. Why is it important for educational practices to be grounded in research evidence, according to researchers, policymakers, and school leaders in England?
2. What are the primary criticisms of EBP in education, and how do these criticisms highlight the need for a broader understanding of what constitutes valid research?

REVIEW METHODOLOGY

A narrative review was chosen for this study due to the broad nature of the topic. Thus, the review involves gathering, critiquing and summarising relevant journal articles, books and grey literature to present a comprehensive overview of literature pertinent to understand the effect of EBP in education. The literature search encompassed education and social science databases, including the British Education Index (BEI), Education Research Complete (ERC) and the Education Resource Information Center (ERIC), as well as databases covering the social sciences and psychology such as APA PsycNet. Searches were refined using keywords, synonyms, related terms and advanced search techniques relevant to the main research question. Further refinement was achieved by filtering for specific types of articles and employing Boolean logic. An initial literature search was conducted using key terms and related terms taken from the two research questions cited above.

The database search began by employing the words and terms “evidence-based practice” OR “evidence-informed practice” OR “research-based education” AND “education.” It produced 20,023 results. Further searches added related terms such as “cognitive science,” “medical model,” “clinical model,” “teacher development models” and “early career teacher*.” Boolean logic (AND, OR, NOT) and nested searches were used, with some searches excluding terms like “autism” and “special education” to refine the results to those which focused on general teacher development. The search was then limited to the BEI and to peer-reviewed journal articles, periodicals and books in English, excluding grey literature, blogs and non-peer-reviewed professional journals (grey literature and blogs are still referenced below to signpost key government policies influencing the spread of EBP in England). The BEI was used to make the search manageable and because the main geographical focus of the review is on the impact of EBP in England (although a number of articles listed in the BEI database focused on other geographical areas). Filters specified whether to search for the words in titles or all text. The timeframe was set between 2014 and 2023, with a later extension to 1980 for articles on the “medical model” of teacher development. Eventually, the search was narrowed to papers from 2018 onwards. The search yielded 25 articles and another 19 were considered through bibliographic mining (including backward and forward citation). See figure 1 below.

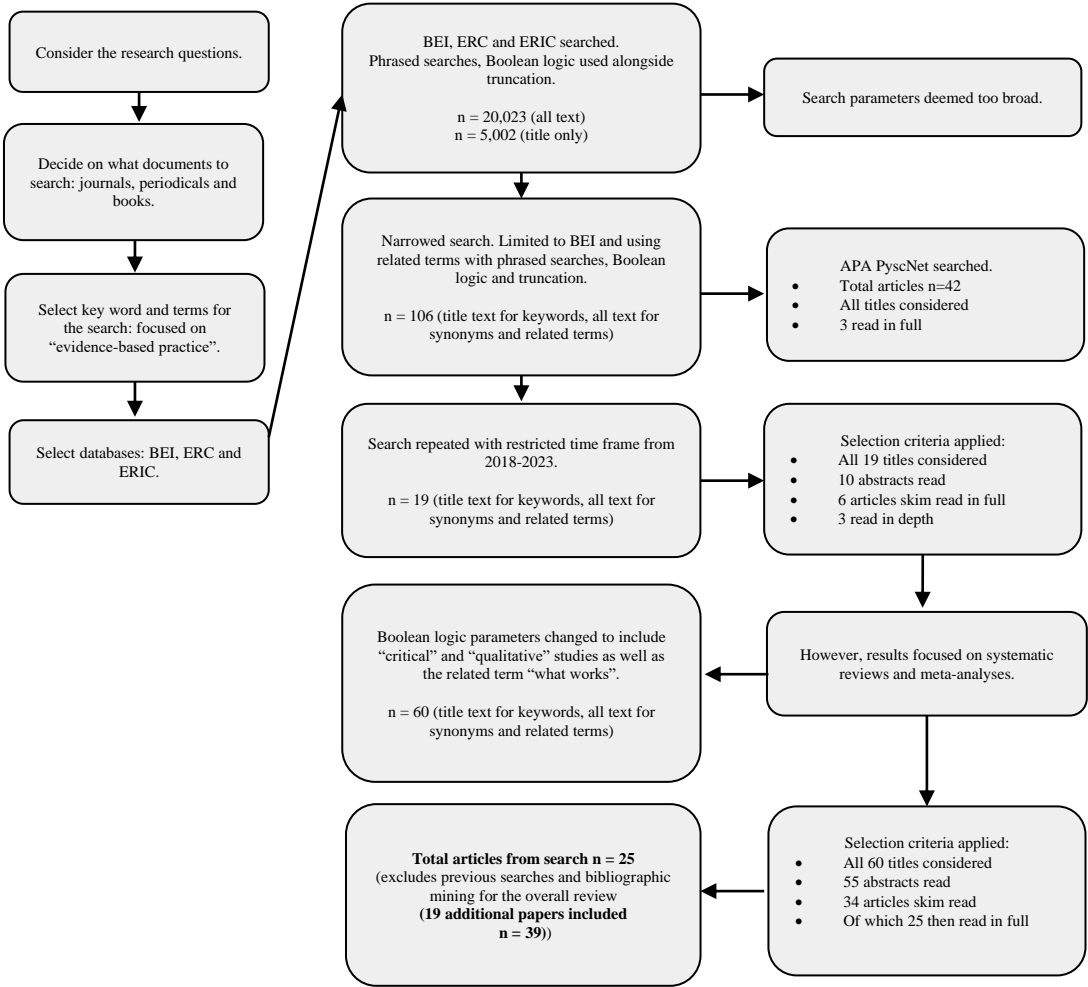
LITERATURE ANALYSIS

Following Burgess et al. (2006), the initial stages of the literature analysis involved a careful examination of titles to conduct a preliminary purge of references deemed irrelevant. However, relying solely on the titles limited the ability to determine the relevance of all papers. The subsequent phase involved evaluating abstracts, conclusions and introductions while keeping the aim of the literature review and research topic in mind. Skimming the entire article became the final step due to time constraints. When deciding whether to include or exclude a source, factors considered included its primary focus on the identified subject area, contribution to field development, relevance to ongoing debates, assistance in defining the research question or confirming a gap in the literature, offering new



perspectives, suggesting alternative methodologies and ensuring the ability to justify exclusions.

Figure 1: Flowchart of the initial database search for this review.



The collected papers were then analysed using ‘thematic analysis,’ a method for identifying, organising and offering insight into patterns of meaning across a data set (Braun & Clarke, 2012). As this is a narrative review and not a systematic review, rigorous coding was not used. However, this approach used interpretive categorising of the trends in the papers in order to identify key themes. The analysis process was both inductive and deductive. It was inductive in that emerging themes were selected from the analysis of the collected papers, and deductive as it was guided by the two research questions. The purpose was to identify patterns relevant to answering the specific research questions.

The literature presents several key themes, which are elaborated below in table 1, and discussed under these wider subheadings in the next section:



1. The current configuration of EBP or the 'What Works' approach.
2. Challenges and criticisms, encompassing EBP's bypassing of wider philosophical issues in education, the impact on teacher agency, demographic groups and methodological issues.
3. Proposals for overcoming these challenges, including communal constructivism, better practitioner understanding and the acknowledgement of mixed methods as a way to enhance quantitative research.
4. A discussion on possibilities for further research on improving EBP in education.

Table 1: Key themes emerging from the initial database search

Main themes	Sub themes (main points)	Examples from the literature to support the themes
Theme 1: Closing the loop: understanding the knowledge gap between research and practice in schools	<ul style="list-style-type: none"> Teachers are not educated or trained about EBP, including RCTs, which means implementation is flawed and problematic. Leaders are in favour, but do not understand how EBP interventions work in practice. This includes school clusters. Teacher beliefs, and assumptions, hinder EBP. There are, however, improvements in teachers' understanding of EBP, which paves the way for more effective use of EBP in schools. 	MacRae (2019), Flynn (2019), Dekker & Meeter (2022), Pegram et al. (2022), Slavin (2019), Basckin et al. (2021), Cowen (2019), Graves & Moore (2018), Bennett (2013), Didau (2016), Coe & Kime (2019), Perry et al. (2021), Coldwell, (2022)
Theme 2: Teacher agency and EBP: a balancing act between evidence and professional discretion	<ul style="list-style-type: none"> Values and ethics are essential to teacher agency and identity and are, arguably, lost in EBP. EBP has significant limitations in transparency and theoretical background may compromise its applicability to frontline professionals. Moreover, EBP ignores the open system of the classroom. Affects the democratic element of education. Often EBP is enforced on individuals at the expense of 'voice' or teacher expertise. Improvements in RCTs, as well as other versions of EBP, will give more contextual data allowing for more individualised and contextualised choices to be made by teachers in the classroom. 	Biesta (2007, 2010, 2023; 2024), Biesta et al. (2015), Simmie (2023), Holloway & Larsen Hedegaard (2023), Cowen (2019), Gewirtz & Cribb (2020), Wolgemuth et al. (2022), Wrigley & McCusker (2019), Flynn (2019), Dekker & Meeter (2022), MacRae (2019), (Joyce, 2019), (Coe & Kime, 2019)
Theme 3: Beyond RCTs and meta-analyses: rethinking "gold standards" for educational research	<ul style="list-style-type: none"> The methodology of RCTs is limited and not always conducive to open education systems. They do not replicate the day-to-day situations of teachers. Even advocates of RCTs question their representativeness and poor formulation of non-contextual effect sizes. Issues around context: Cultural differences, disability issues and locational differences as well as age groups are rarely accounted for. Improvements in RCTs, as well as other versions of EBP, will give more contextual data allowing for more individualised and contextualised choices to be made by teachers in the classroom. 	Biesta (2007, 2010, 2023), Wrigley (2016, 2018), Wrigley & McCusker (2019), Cheung & Slavin (2016), Joyce (2019), Cartwright & Joyce (2019), Slavin (2019), Dekker & Meeter (2022), Hwa (2023), Eppley et al. (2018), Imray et al. (2023), Kay (2022), Flynn (2019), and Dekker & Meeter (2022)
Theme 4: Beyond the medical model: rethinking evidence-based practice for a diverse	<ul style="list-style-type: none"> That EBP is predominately generic and based on mainstream pupils. Very little contextualisation of SEND and children with disabilities. EBP studies, including RCTs, are often indifferent to cultural and social differences, particularly on a global scale. That context related location is essential in understanding the impact of EBP, including the differences between urban studies and rural 	Imray et al. (2023), Eppley et al. (2018), Hwa (2023), Holloway & Larsen Hedegaard (2023), Joyce (2019), Cartwright & Joyce (2019), Kay (2022), Coldwell, (2022)

educational landscape	implementation. <ul style="list-style-type: none">Many EBP studies focus on phases other than early years. Most studies are secondary based, higher primary or generic. Some use adults as test subjects despite being packaged as learning studies per se. Very few EBP studies, therefore, are applicable to early years.	
-----------------------	---	--

DISCUSSION ON FINDINGS

The current configuration of EBP and the ‘What Works’ approach

It is clear from the literature that, over the past twenty-five years, a significant debate has emerged concerning the quality and applicability of educational research in informing practice and policy. This discussion gained traction in the UK after sociologist David Hargreaves challenged the research foundation of teaching in 1996, criticising educational research as largely disappointing and inaccessible. He described it as ‘...a private, esoteric activity, seen as irrelevant by most practitioners’ (Hargreaves, 1996, p. 3). Hargreaves advocated for a medical model of EBP, emphasising the need to identify, test and quantify the impact of specific interventions. The core idea is that if implementing action X leads to desirable outcome Y, then X should be considered effective. This approach suggests that teachers, like medical doctors, should follow evidence-based standards (Burn & Mutton, 2015; Becher & Lefstein, 2021). EBP, therefore, has two facets: aligning teaching with research evidence, particularly ‘what works’ (Slavin, 2002, 2008, 2019; Slavin et al., 2021), and encouraging teachers to leverage evidence from their students to optimise learning outcomes (Kriewaldt & Turnidge, 2013; Sharples et al., 2024). By embracing EBP and its preferred research methods, it is argued that teachers can better cater to the needs of all students (Weinstein et al., 2018; Flynn, 2019; Owen et al., 2022).

The promise of EBP

In literature favourable to EBP, and considering the first research question stated above (why is it important for educational practices to be grounded in research evidence according to researchers, policymakers, and school leaders in England?), proponents often depict the implementation of EBP in new policy domains as a scientific endeavour superior to less rigorous, evidence-based approaches. Subsequently, the push for EBP and the ‘what works’ approach in education arises from the growing reliance on quantitative methodologies like laboratory experiments, RCTs and meta-analyses (Dunlosky et al., 2013; Didau & Rose, 2016; Connolly et al., 2018; Coe & Kime, 2019; Neelen & Kirschner, 2020). Laboratory experiments are considered objective and devoid of teachers’ biases (Bennett, 2013; Didau, 2016), a viewpoint echoed by those emphasising the wider role of cognitive science in EBP, which would also include field experiments and other ‘correlation studies’ (Weinstein et al., 2018; Kirschner & Hendrick, 2020; Perry et al., 2021; Zhang, et al., 2022; Kirschner et al., 2022). Moreover, RCTs are frequently presented as the ‘gold standard,’ uncovering causal relationships between interventions and outcomes (Goldacre, 2013; Cowen, 2019; Dekker, & Meeter, 2022). Increasingly large and contextually varied meta-analyses are seen as offering the possibility of moving beyond the notion of ‘what works’ towards understanding what works for whom, under what conditions, and in what circumstances (Connolly et al., 2019). Finally, new imaging technologies facilitating a finer-grained understanding of the brain have led some researchers to call for greater application of ‘educational neuroscience’ or ‘neuro-education’ in schools and classrooms (Perry et al., 2021). Advocates regularly cite the EEF Teaching Toolkit in the UK, the What Works Clearinghouse, and Evidence for ESSA websites in the USA, as well as the Best-Evidence-in-Brief network in China, offering systematic reviews as proof that EBP interventions are effective (Coe & Kime, 2019; Slavin, 2019; Slavin et al.,



2021; Coldwell, 2022).

As suggested previously, this model of teacher training and development is now incorporated into government reforms in England, such as the DfE's Initial Teacher Training (ITT) Core Curriculum Framework and the ECF (DfE, 2019a, 2019b; Gibb, 2023), and informs Ofsted's, the UK government's school inspectorate, inspection criteria (Muijs, 2020). Various avenues for teachers to engage with EBP exist too, including institutions like the Education Endowment Fund (EEF) and the Chartered College of Teaching, as well as organisations and networks like The Teacher Development Trust (TDT), researchED and the Research Schools Network (Weinstein et al., 2018; Coe & Kime, 2019; Coldwell, 2022). Many key figures within these organisations have contributed to the formulation of ITT and ECF policy documents, especially the EEF's role in shaping the ECF (Watson, 2021).

EBP: Challenges and Criticisms

While EBP garners support, challenges and criticisms persist. Considering the second research question stated earlier (what are the primary criticisms of EBP in education, and how do these criticisms highlight the need for a broader understanding of what constitutes valid research?), it is evident that concerns include the purpose of education, teacher agency, contextualisation of research, and the problem of applying methodologies from the natural sciences in complex social settings.

Biesta (2023, 2024) questions whether the current EBP configuration sufficiently resists education's instrumentalisation and the push for empirical research solely focused on 'what works,' often at the expense of broader educational values, which include discussions on the moral purpose of education. In a similar vein, Simmie (2021, 2023) and Simmie et al. (2024) criticise the framing of training and professional development as EBP, identifying limitations in the data-driven system of performance management. They challenge the 'reductionist analytics' and the bypassing of the 'ethico-political question' of whose knowledge counts in evidence-based practice, emphasising the need for a more holistic perspective transcending the conventional 'what works' and 'what counts' approach (ibid., p. 56).

Concerns about EBP restricting teachers' agency are raised by Holloway and Larsen Hedegaard (2023). They argue that EBP might limit teachers' professional discretion and authority, restricting their capacity to respond to the diverse needs. This critique raises concerns about the rigidity of ontological spaces within schools, questioning the feasibility of fostering an 'ethos of pluralisation' within EBP (ibid., p. 4). Their view resonates with Ball's (2021) assertion that teachers are becoming technicians, responding to target-driven and market-oriented school policies, as well as other research exploring the impact of policies on teacher agency (Biesta et al., 2015). A review by Cowen (2019) also suggests that despite evidence supporting some interventions, research is forced upon the frontline staff without any consultation, and processes are bureaucratic and inflexible. Similarly, researchers such as Gewirtz and Cribb (2020), contend that the rise of instrumentalist research under EBP principles negatively affects academic research staff. This trend not only erodes academic integrity but also jeopardises the democratic voice of researchers in the research process, as highlighted by Wolgemuth et al. (2022). This situation implies that researchers may feel compelled to produce studies aligned with EBP practices in educational institutions, curtailing the agency of both researchers and teachers.

Another key criticism found in the literature targets EBP's lack of universal applicability across all education settings, demographic groups and individual pupils. Imray et al. (2023) claim EBP disadvantages learners with severe

learning disabilities, criticising the tendency to universalise teaching strategies and assume homogeneous learning. They advocate that EBP moves away from its current determinism and better tailors classroom practice to the diverse needs, potentially expanding the definition of evidence, its purpose and its measurement. Similarly, others point out EBP's better suitability for older students while questioning its appropriateness for younger learners (Kay, 2022) or meeting the needs of the diverse communities in differing rural settings (Eppley et al., 2018). Hwa (2023) further argues that EBP proponents often neglect the relationship between sociocultural context and education policy, particularly how quantitative studies supporting EBP decontextualise 'best practices' in cross-country student achievement comparisons.

Furthermore, researchers criticise this model of EBP for oversimplifying natural science, particularly by isolating variables in controlled conditions, or 'closed systems,' which are not akin to the 'open systems' found in everyday educational settings (Biesta, 2007, 2010; Wrigley, 2016; Wrigley & McCusker, 2019). Wrigley (2016) highlights limitations in this model, rooted in cognitive psychology, such as small sample sizes, demographic discrepancies between experimental and control groups, intricate control group comparisons, difficulties in accurately measuring learning-related variables and the unreliability of test scores, particularly when not externally assessed. Additionally, potential biases introduced by both students and teachers in research studies raise concerns. Wrigley urges caution in incorporating cognitive psychology and neuroscience findings into educational decision-making, emphasising the need for a nuanced understanding of EBP within teaching practices.

Lastly, and considering the above, the question of what qualifies as evidence poses a significant challenge for scientific-centric EBP. Researchers like Hammersley (1997, 2005) and Davies (1999) emphasise the need for qualitative research methods to assess the impact of educational activities on students' self-perception, social value and identity. Hammersley (2013) suggests that researchers should explore the varied ways of which individuals experience the world, considering that these interpretations are often influenced by cultural and contextual factors. This approach facilitates a deeper understanding of social phenomena beyond the mere description. Utilising methods such as ethnography or unstructured interviews allows for richer, more nuanced insights from the subjects' perspectives (Tuli, 2010).

Overcoming the Challenges

Despite the reservations outlined above, Flynn (2019) explores the potential of communal constructivism as a pedagogical approach to EBP, fostering collaboration between researchers and practitioners. This perspective promotes shared efforts to translate research findings into effective teaching practices. Moreover, Flynn points out that larger and better-coded data sets in RCTs are gradually addressing criticisms of EBP being overly decontextualised. This is a view shared, in relation to representativeness and locality, by Joyce (2019) and Cartwright and Joyce (2019), who believe improvements in sampling and data set selection could improve RCTs and, therefore, aspects of EBP. However, they also argue that external validity in education is challenging because educational contexts significantly influence the effectiveness of interventions. They suggest that educational researchers should study why and how something might work in a specific context through a mixed methods approach. This involves examining possible supportive strategies, obstacles and the local frameworks that enable causal pathways to an intervention succeeding in particular settings, alongside any consideration of the average effects of generalised research (Cartwright & Joyce, 20q9; Coldwell, 2022; Dekker, & Meeter, 2022).

Whilst strong support exists for aligning practices with research evidence, concerns arise regarding its poor



implementation in schools, which dampens its perceived effectiveness amongst teachers (Coldwell, 2022; Pegram et al., 2022). Studies by Graves and Moore (2018) and Basckin et al. (2021) point to a crucial gap - limited understanding of the research process among educators, particularly in areas like school leadership and special educational needs. This hampers effective use of research-based practices, as also highlighted by Flynn (2019). MacRae (2019) further emphasises the need for exploring the impact of educational research on teachers, acknowledging both potential benefits and uncertainties. Therefore, addressing this knowledge gap through better training in research literacy and engagement could bridge the divide between research and practice, paving the way for stronger acceptance and impact of evidence-based practices in schools.

Nevertheless, it should be acknowledged that many researchers operating within the EBP paradigm regularly acknowledge the limitations of their own quantitative methods and evidence. Cheung and Slavin (2016), Gorard et al. (2020) and Owen et al. (2022) exemplify this critical self-awareness, as do researchers such as Cartright and Joyce (2019), particularly in relation to RCTs and contextual representation. Notably, some recognise that fully understanding research evidence extends beyond a narrow reliance on positivist methodologies and call for diverse research methods tailored to different educational questions (Gorard et al., 2010). For instance, Goldacre (2013), while emphasising the importance of RCTs, also acknowledges the value of qualitative research in generating questions and understanding intervention mechanisms, which fits well with the theoretical positioning of mixed methods. Similarly, the combined use of quantitative and qualitative research ensures both validity and a comprehensive understanding of interventions' implementation and acceptability (Scott & McNeish, 2013). This demonstrates the need for a multifaceted approach in education research, one that considers the type of question and purpose while acknowledging the diverse research methods available. Researchers adhering to a rigorous scientific EBP should not dismiss qualitative evidence but recognise its crucial role in informing and enriching the impact and meaning of quantitative findings. It could be argued, then, that EBP should not be seen as an exclusive scientific enterprise.

Opportunities for Further Research

Despite extensive research on EBP in education, several opportunities for further research remain. Addressing these is crucial for developing a more nuanced and effective application of EBP that acknowledges the complexities and variances of educational settings. These opportunities include:

- **Integration of qualitative research and contextual relevance:** There is a need for more studies on how qualitative research can complement quantitative methods within EBP frameworks. Additionally, research often overlooks the importance of tailoring EBP to diverse educational contexts and demographic groups, particularly marginalised or disadvantaged communities.
- **Teacher autonomy, professional development and identity:** Current literature criticises EBP for potentially undermining the teacher autonomy, but empirical studies are lacking. More longitudinal research is needed to understand the impact of EBP on teacher agency, professional discretion, identity over time and how EBP can support rather than constrain these aspects.
- **Practical implementation challenges and research literacy:** Practical barriers to EBP adoption in real-world settings, such as logistical, financial and infrastructural issues, are underexplored. Additionally, there is a gap

in comprehensive programs and empirical evaluations aimed at improving teachers' research literacy and engagement with EBP.

- **Interdisciplinary approaches and policy impact:** EBP in education often lacks engagement with other disciplines like sociology and anthropology, which could offer valuable perspectives. Furthermore, the influence of educational policies on EBP implementation and the involvement of various stakeholders, including policymakers and school leaders, require more research to inform more effective and inclusive policy-making.

LIMITATIONS

This study is a narrative review; however, a systematic review or meta-analysis might be more effective in identifying biases in the literature regarding EBP. The study's reliance on the BEI database, while allowing for a more focused review, potentially excluded relevant sources available in other databases. Additionally, the review concentrated on articles discussing the strengths and limitations of EBP, rather than examining the broader impact of specific interventions within cognitive sciences, which would be more numerous. This focus likely accounts for the omission of seminal, influential papers such as Rosenshine (2012) and Dunlosky (2013). Furthermore, the review did not include an analysis of popular teaching books, which are often authored by educators or educational consultants, such as 'Teach Like A Champion' (Lemov, 2021). This omission is worth noting, as these works currently influence the teaching practices and perspectives on EBP in England.

CONCLUSION

The literature review above reveals both promising trajectories and evident challenges. In answer to the first research question, stated and discussed previously, researchers and policymakers in England emphasise the importance of grounding educational practices in research evidence to ensure that teaching methods are effective and beneficial for all students. Proponents of EBP argue that aligning educational practices with research, particularly through cognitive sciences and RCTs, can identify and promote 'best practices' that optimise learning outcomes. EBP based on scientific and quantitative methodologies is seen as more objective, representative and rigorous than less scientific methods, such as qualitative research. Even where the weaknesses are recognised, researchers often propose more complex research strategies and syntheses of data rather than addressing issues with the nature of the methodologies themselves.

However, the primary criticisms of EBP highlight several limitations. Considering the second research question, stated and discussed in the preceding sections, critics argue that an overemphasis on scientific and quantitative methodologies may overshadow other valid forms of research, potentially leading to a narrow understanding of what constitutes evidence. Concerns are raised about EBP's potential to restrict teacher autonomy, impose rigid frameworks, and inadequately address the diverse needs of different educational settings and demographic groups. Furthermore, challenges in practical implementation and limited research literacy among educators hinder the effective adoption of EBP.



Addressing these criticisms involves fostering a more inclusive approach that values qualitative research and contextual relevance, thereby ensuring EBP supports rather than constrains teachers' professional discretion. Collaborative efforts between researchers and practitioners, along with enhanced research literacy, are essential strategies to bridge the gap between research and practice. By embracing a plurality of research methodologies, EBP can be transformed into a flexible tool that effectively meets the varied needs of learners, teachers, and educational contexts.

ACKNOWLEDGEMENTS

I would like to thank Dr. Kris Stutchbury at The Open University for her comments on this literature review, especially how to improve it and develop it further. I am also grateful to Kellie Patterson of the Watford Partnership for Teacher Training for reading and commenting on earlier drafts as well as The Reach Free School for supporting my doctoral studies.

REFERENCES

- Anwer, M., & Reiss, M. (2023). Linking research and practice in education: The views of expert researchers in the field. *Journal of Education for Teaching*, 49(2), 326–340. <https://doi.org/10.1080/02607476.2022.2055447>
- Ball, S. J. (2021). *The education debate* (4th ed.). Bristol: Polity Press.
- Basckin, C., Strnadová, I., & Cumming, T. M. (2021). Teacher beliefs about evidence-based practice: A systematic review. *International Journal of Educational Research*, 106. <https://doi.org/10.1016/j.ijer.2020.101727>
- Becher, A., & Lefstein, A. (2021). Teaching as a clinical profession: Adapting the medical model. *Journal of Teacher Education*, 72(4), 477–488. <https://doi.org/10.1177/0022487120972633>
- Bennett, T. (2013). *Teacher proof*. London: Routledge.
- Biesta, G. (2007). Why “what works” won’t work: Evidence-based practice and the democratic deficit in educational research. *Educational Theory*, 1–22. <https://doi.org/10.1111/j.1741-5446.2006.00241.x>
- Biesta, G. (2010). Why “what works” still won’t work: From evidence-based education to value-based education. *Studies in Philosophy and Education*, 29(5), 491–503. <https://doi.org/10.1007/s11217-010-9191-x>
- Biesta, G. (2023). The integrity of education and the future of educational studies. *British Journal of Educational Studies*, 71(5), 493–515. <https://doi.org/10.1080/00071005.2023.2242452>
- Biesta, G. (2024) Taking education seriously: The ongoing challenge, *Educational Theory*, 74, 1-15. <https://doi.org/10.1111/edth.12646>
- Biesta, G., Priestley M., & Robinson, S. (2015) The Role of Beliefs in Teacher Agency. *Teachers and Teaching: Theory and Practice*, 21(6), pp. 624-640. <https://doi.org/10.1080/13540602.2015.1044325>
- Braun, V., & Clarke, V. (2012). Thematic analysis. In H. Cooper, P. M. Camic, D. L. Long, A. T. Panter, D. Rindskopf, & K. J. Sher (Eds.), *APA handbook of research methods in psychology*, Vol. 2. *Research designs: Quantitative, qualitative, neuropsychological, and biological* (pp. 57–71). American Psychological Association. <https://doi.org/10.1037/13620-004>
- Burgess, K., Singh, P. J., & Koroglu, R. (2006). Supply chain management: a structured literature review and implications for

- future research. *International Journal of Operations & Production Management*, 26(7), 703-729. <http://dx.doi.org/10.1108/01443570610672202>
- Burn, K., & Mutton, T. (2015). A review of 'research-informed clinical practice' in initial teacher education. *Oxford Review of Education*, 41(2), 217-233. <https://doi.org/10.1080/03054985.2015.1020104>
- Cartwright, N., & Joyce, K. (2019). Bridging the gap between research and practice: Predicting what will work locally. *American Educational Research Journal*, 57(3), 1045-1082. <https://doi.org/10.3102/0002831219866687>
- Cheung, A. C. K., & Slavin, R. E. (2016). How methodological features affect effect sizes in education. *Educational Researcher*, 45(5), 283-292. <https://doi.org/10.3102/0013189X16656615>
- Coe, R., & Kime, S. (2019). A (new) manifesto for evidence-based education: Twenty years on. Sunderland. Evidence Based Education.
- Coldwell, M. (2022). Evidence-informed teaching in England. In: Brown, C., & Malin, J. R., (eds.) *The Emerald handbook of evidence-informed practice in education*. Emerald Publishing.
- Coldwell, M., Greany, T., Higgins, S., Brown, C., Maxwell, B., Stiell, B., Stoll, L., Willis, B., & Burns, H. (2017). Evidence-informed teaching: an evaluation of progress in England (London: Department for Education).
- Connolly, P., Keenan, C., & Urbanska, K. (2018). The trials of evidence-based practice in education: A systematic review of randomised controlled trials in education research 1980-2016. *Educational Research*, 60(3), 276-291. <https://doi.org/10.1080/00131881.2018.1493353>
- Cowen, N. (2019). For whom does "what works" work? The political economy of evidence-based education. *Educational Research & Evaluation*, 25(1/2), 81-98. <https://doi.org/10.1080/13803611.2019.1617991>
- Davies, P. (1999). What is evidence-based education? *British Journal of Educational Studies*, 47(2), 108-121. <https://doi.org/10.1111/1467-8527.00106>
- De Bruyckere, P., & Kirschner, P. A. (2022). Translating research into classroom practice: Cognitive science and beyond. *Impact*, (16). Available at: <https://my.chartered.college/impact/issue-16-autumn-2022/> (Accessed: 11 November 2023).
- Dekker, I. & Meeter, M. (2022). Evidence-based education: Objections and future directions. *Frontiers in Education*. <https://doi.org/10.3389/feduc.2022.941410>
- Department for Education (DfE). (2019a). Early career framework (DFE-00015-2019). Available at: <https://assets.publishing.service.gov.uk/media/60795936d3bf7f400b462d74/Early-Career-Framework-April-2021.pdf> (Accessed: 23 October 2023).
- Department for Education (DfE). (2019b). ITT core content framework (DFE-00015-2019). Available at: https://assets.publishing.service.gov.uk/media/6061eb9cd3bf7f5cde260984/ITT_core_content_framework_.pdf (Accessed: 23 October 2023).
- Didau, D. (2016). *What if everything you knew about education was wrong?* Carmarthen: Crown House Publishing.
- Didau, D., & Rose, N. (2016). *What every teacher needs to know about psychology*. John Catt Educational.
- Dunlosky, J. (2013). Strengthening the Student Toolbox: Study Strategies to Boost Learning. *The American Educator*, 37, 12-21.
- Dunlosky, J., Rawson, K. A., Marsh, E. J., Nathan, M. J., & Willingham, D. T. (2013) Improving students' learning with effective



- learning techniques: Promising directions from cognitive and educational psychology. *Psychological Science in the Public Interest, Supplement*, 14(1), 4–58. <https://doi.org/10.1177/1529100612453266>
- Eppley, K., Azano, A., Brenner, D., & Shannon, P. (2018). What counts as evidence in rural schools? *The Rural Educator*, 39(2), 36–40. <https://doi.org/10.35608/ruraled.v39i2.208>
- Flynn, N. (2019). Facilitating evidence-informed practice. *Teacher Development*, 23(1), 64–82. <https://doi.org/10.1080/13664530.2018.1505649>
- Gewirtz, S., & Cribb, A. (2020). What works? Academic integrity and the research-policy relationship. *British Journal of Sociology of Education*, 41(6), 794–806. <https://doi.org/10.1080/01425692.2020.1755226>
- Gibb, N. (2023). Letter from the Minister of State for Schools celebrating the first cohort of early career teachers completing their training, the Rt. Hon. Nick Gibb MP. October 2023. Available at: <https://generateteachinghub.org/wp-content/uploads/2023/11/ECF-Letter-to-schools-October-2023.pdf> (Accessed: 27 May 2024).
- Goldacre, B. (2013). Building evidence into education. Available at: https://assets.publishing.service.gov.uk/media/5a7a219140f0b66eab999f4f/Building_evidence_into_education.pdf (Accessed: 27 May 2024).
- Gorard, S., Arthur, J., & Davies, I. (2010). Accessing and understanding research in education. In *The Educational Studies Routledge Textbook* (pp. 237–247). Abingdon: Routledge.
- Gorard, S., See, B.H. & Siddiqui, N. (2020). What is the evidence on the best way to get evidence into use in education?. *Review of Education*, 8, 570–610. <https://doi.org/10.1002/rev3.3200>
- Graves, S., & Moore, A. (2018). How do you know what works, works for you? An investigation into the attitudes of senior leaders to using research evidence to inform teaching and learning in schools. *School Leadership and Management*, 38(3), 259–277. <https://doi.org/10.1080/13632434.2017.1366438>
- Hammersley, M. (1997). Educational research and teaching: A response to David Hargreaves' TTA lecture. *British Educational Research Journal*, 141–161. <https://doi.org/10.1080/0141192970230203>
- Hammersley, M. (2005). The myth of research-based practice: The critical case of educational inquiry. *International Journal of Social Research Methodology: Theory and Practice*, 8(4), 317–330. <https://doi.org/10.1080/1364557042000232844>
- Hammersley, M. (2013). *What is qualitative research?* London: Bloomsbury.
- Hargreaves, D. (1996). Teaching as a research-based profession: Possibilities and prospects (inaugural TTA annual lecture). London: Teacher Training Agency. Available at: <https://eppi.ioe.ac.uk/cms/Portals/0/PDF%20reviews%20and%20summaries/TTA%20Hargreaves%20lecture.pdf> (Accessed: 27 May 2024).
- Holloway, J., & Larsen Hedegaard, M. L. (2023). Democracy and teachers: the impossibilities for pluralisation in evidence-based practice. *Journal of Education Policy*, 38(3), 432–451. <https://doi.org/10.1080/02680939.2021.2014571>
- Hwa, Y.-Y. (2023). "What works" depends: teacher accountability policy and sociocultural context in international large-scale surveys. *Journal of Education Policy*, 38(3), 474–499. <https://doi.org/10.1080/02680939.2021.2009919>
- Joyce, K. E. (2019). The key role of representativeness in evidence-based education. *Educational Research and Evaluation*, 25(1-2), 43–62. <https://doi.org/10.1080/13803611.2019.1617989>

- Imray, P., Kossyvak, L., & Sissons, M. (2023). Evidence-based practice: the use and abuse of research. *Support for Learning*, 38(1), 51–66. <https://doi.org/10.1111/1467-9604.12438>
- Kay, L. (2022). "What works" and for whom? Bold beginnings and the construction of the school-ready child. *Journal of Early Childhood Research*, 20(2), 172–184. <https://doi.org/10.1177/1476718X2110527>
- Kirschner, P. A., & Hendrick, C. (2020). *How learning happens: seminal works in educational psychology and what they mean in practice*. London: Routledge. <https://doi.org/10.4324/9780429061523>
- Kirschner, P. A., Hendrick, C., & Heal, J. (2022). *How teaching happens: Seminal works in teaching and teacher effectiveness and what they mean in practice*. London: Routledge.
- Kriewaldt, J., & Turnidge, D. (2013). Conceptualising an approach to clinical reasoning in the education profession. *Australian Journal of Teacher Education*, 38(6), 103-115. <https://doi.org/10.14221/ajte.2013v38n6.9>
- Lemov, D. (2021). *Teach like a champion 3.0: 63 techniques that put students on the path to college*. New York, NY: Jossey- Bass.
- MacRae, E. (2019). Are teachers gaining from educational trials? A question of evidence-based practice. *School Science Review*, 100(373), 25-28. Retrieved from <https://www.ase.org.uk/resources/school-science-review/issue-373> (Accessed: 27 May 2024).
- Muijs, D. (2020, January 23). Why we do research at Ofsted. *Ofsted Blog*. Retrieved from <https://educationinspection.blog.gov.uk/2020/01/23/why-we-do-research-at-ofsted/> (Accessed: 27 May 2024).
- Neelen, M., & Kirschner, A. K. (2020). *Evidence-informed Learning Design: Creating training to improve performance*. New York: Kogan Page Limited.
- Owen, K. L., Watkins, R. C., & Hughes, J. C. (2022). From evidence-informed to evidence-based: An evidence building framework for education. *Review of Education*, 10(1). <https://doi.org/10.1002/rev3.3342>
- Pegram, J., Watkins, R. C., Hoerger, M., & Hughes, J. C. (2022). Assessing the range and evidence-base of interventions in a cluster of schools. *Review of Education*, 10, e3336. <https://doi.org/10.1002/rev3.3336>
- Perry, T., Lea, R., Jørgensen, C. R., Cordingley, P., Shapiro, K., & Youdell, D. (2021). *Cognitive science in the classroom*. London: Education Endowment Foundation (EEF). Retrieved from <https://educationendowmentfoundation.org.uk/evidence-summaries/evidence-> (Accessed: 20 May 2024).
- Roediger III, H. L. (2013). Applying cognitive psychology to education translational educational science. *Psychological Science in the Public Interest*, 14, 1–3. <https://doi.org/10.1177/1529100612454415>
- Rosenshine, B. (2012). Principles of instruction: Research-based strategies that all teachers should know. *American Educator*, 36(1), 12–39.
- Scott, S., & McNeish, D. (2013). *School leadership evidence review: using research evidence to support school improvement*. Department for Education: London. Retrieved from <https://www.bristol.ac.uk/media-library/sites/cubec/migrated/documents/evidencereview3.pdf> (Accessed: 26 May 2024).
- Sharples, J., Albers, B., & Fraser, S. (2024). *Putting evidence to work: a school's guide to implementation*. EEF: London.
- Simmie, G. M. (2021). Teacher professional learning: a holistic and cultural endeavour imbued with transformative possibility. *Educational Review*, 75(5), 916–931. <https://doi.org/10.1080/00131911.2021.1978398>
- Simmie, G. M. (2023). The gendered construction of teachers' identities and practices: feminist critical discourse analysis of



- policy texts in Ireland. *Gender and Education*, 35(3), 282–298. <https://doi.org/10.1080/09540253.2023.2167944>
- Simmie, G. M., O'Meara, N., Forster, A., Ryan, V., & Ryan, T. (2023). Towards a model of Teachers' Continuing Professional Development (CPD): a border crossing journey with embedded contradictions, ethical dilemmas and transformative possibilities. *Professional Development in Education*, 50(1), 46–58. <https://doi.org/10.1080/19415257.2023.2283420>
- Slavin, R. E. (2002). Evidence-Based Education Policies: Transforming Educational Practice and Research. *Educational Researcher*, 31(7), 15–21. <https://doi.org/10.3102/0013189X031007015>
- Slavin, R. E. (2008). Evidence-Based Reform in Education: What Will it Take? *European Educational Research Journal*, 7(1), 124–128. <https://doi.org/10.2304/eeerj.2008.7.1.124>
- Slavin, R. E. (2019). How evidence-based reform will transform research and practice in education. *Educational Psychologist*, 55(1), 21–31. <https://doi.org/10.1080/00461520.2019.1611432>
- Slavin, R., Cheung, A., & Zhuang, T. (2021). How evidence-based reform could advance education. *ECNU Review of Education*, 4(1), 7–24. <https://doi.org/10.1177/2096531120976060>
- Tuli, F. (2010). 'The basis of distinction between quantitative and qualitative in social science: reflection on ontological, epistemological and methodological perspectives'. *Ethiopian Journal of Education and Science*, 6(1), 97–108. <https://doi.org/10.4314/ejesc.v6i1.65384>
- Watson, S. (2021). New right 2.0: Teacher populism on social media in England. *British Education Research Journal*, 47, 299–315. <https://doi.org/10.1002/berj.3664>
- Weinstein, Y., Madan, C. R., & Sumeracki, M. A. (2018). 'Teaching the science of learning'. *Cognitive Research: Principles and Implications*. Springer. <https://doi.org/10.1186/s41235-017-0087-y>
- Wolgemuth, J., Marn, T., & Sabnis, S. (2022). 'On the sidelines of what works: scientifically based indifference'. *International Journal of Research & Method in Education*, 45(2), 150–163. <https://doi.org/10.1080/1743727X.2021.1966620>
- Wrigley, T. (2016). Not So Simple: the problem with 'evidence-based practice' and the EEF toolkit. *FORUM*, 58(2), 237–252. <https://doi.org/10.15730/forum.2016.58.2.237>
- Wrigley, T. (2018). The power of 'evidence': Reliable science or a set of blunt tools? *British Educational Research Journal*, 44, 359–376. <https://doi.org/10.1002/berj.3338>
- Wrigley, T., & McCusker, S. (2019). Evidence-based teaching: a simple view of "science". *Educational Research and Evaluation*, 25(1-2), 110–126. <https://doi.org/10.1080/13803611.2019.1617992>
- Zhang, L., Kirschner, P. A., Cobern, W. W., & Sweller, J. (2022). There is an evidence crisis in science educational policy. *Educational Psychology Review*, 34, 1157–1176. <http://dx.doi.org/10.1007/s10648-021-09646-1>